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USSR: Economic Trends and Policy Developments

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Introduction

When Yuri Andropov became General Secretary of the Communist Party of the USSR, economic growth rates had been falling, the increase in per-capita consumption had come to a halt, and resource allocation decisions between military and civilian needs were becoming more difficult. Externally the Soviet Union was providing support to the stagnating economies of Eastern Europe (particularly Poland) and fighting a costly war in Afghanistan.

With the first anniversary of Andropov's rise to power approaching, we review in this paper his policies and programs and assess their impact on the economy and on military spending. The paper first summarizes the performance of the Soviet economy in 1981-82 and the reasons for the sluggish economic growth during this period. The economic policies being pursued by Andropov, insofar as they have been revealed, are then described, and the effect that these policies have had and are likely to have on economic growth in the near term is assessed. In the final section, we turn to the longer term outlook for Andropov's economic and defense policies and for the economy in general.

Economic Performance in 1981-82

In the first two years of the 11th Five-Year Plan period (1981-85), growth in Soviet gross national product (GNP) averaged about 2 percent per year, somewhat above that attained during 1979-80 but well below both the rate achieved during the 1970s and the rate implied by the 1981-85 Plan (figure 1). The 1981-85 Plan depended on a strong turnaround in the rate of growth of the combined productivity of labor and capital. Instead, factor productivity in the economy declined in 1981-82 by about one percent per year. General Secretary Andropov found almost every sector of the economy lagging behind plan when he took office in November 1982.

Industry

The slowdown in the growth of industrial output was especially worrisome. In 1981-82, average annual growth was less than 2 1/2 percent, about half the rate called for in the 1981-85 Plan (figure 2). Two developments during this period were particularly noteworthy: (1) the slowdown was evident in practically every industrial branch, and (2) the trend in the productivity of labor and capital employed in industry was down dramatically. Despite considerable effort, the Soviets were unable to halt the deterioration in efficiency with which combined inputs of capital and labor are used in the USSR. Factor productivity in industry declined at an average annual rate of roughly 1 1/2 percent during 1981-82.

Energy and Raw Materials. The growth of energy production in the USSR has decelerated significantly. After three decades

Figure 1
USSR: Average Annual Percentage
Growth of GNP

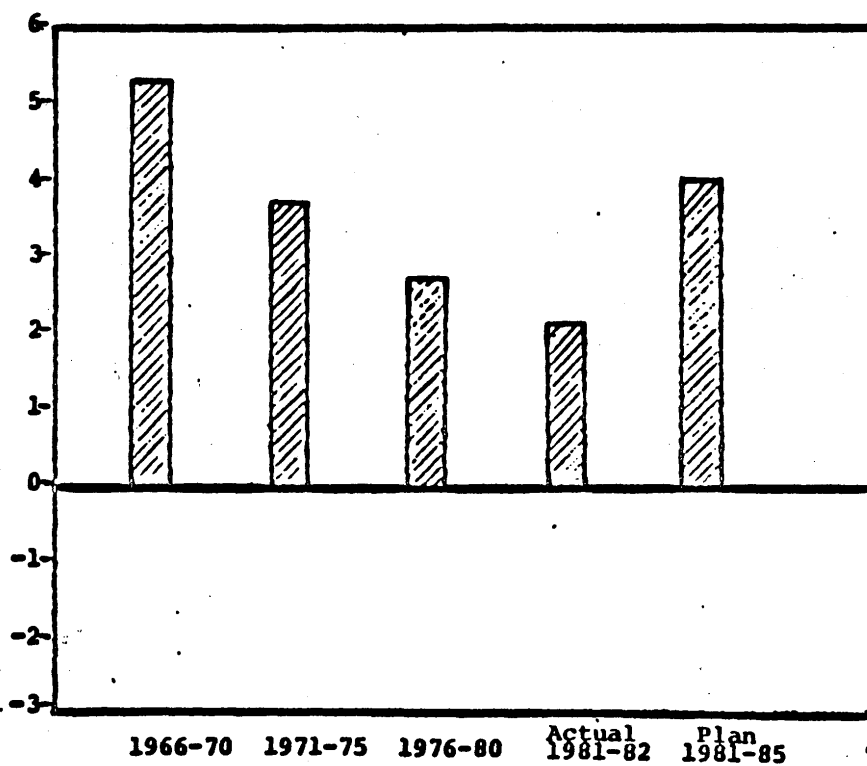
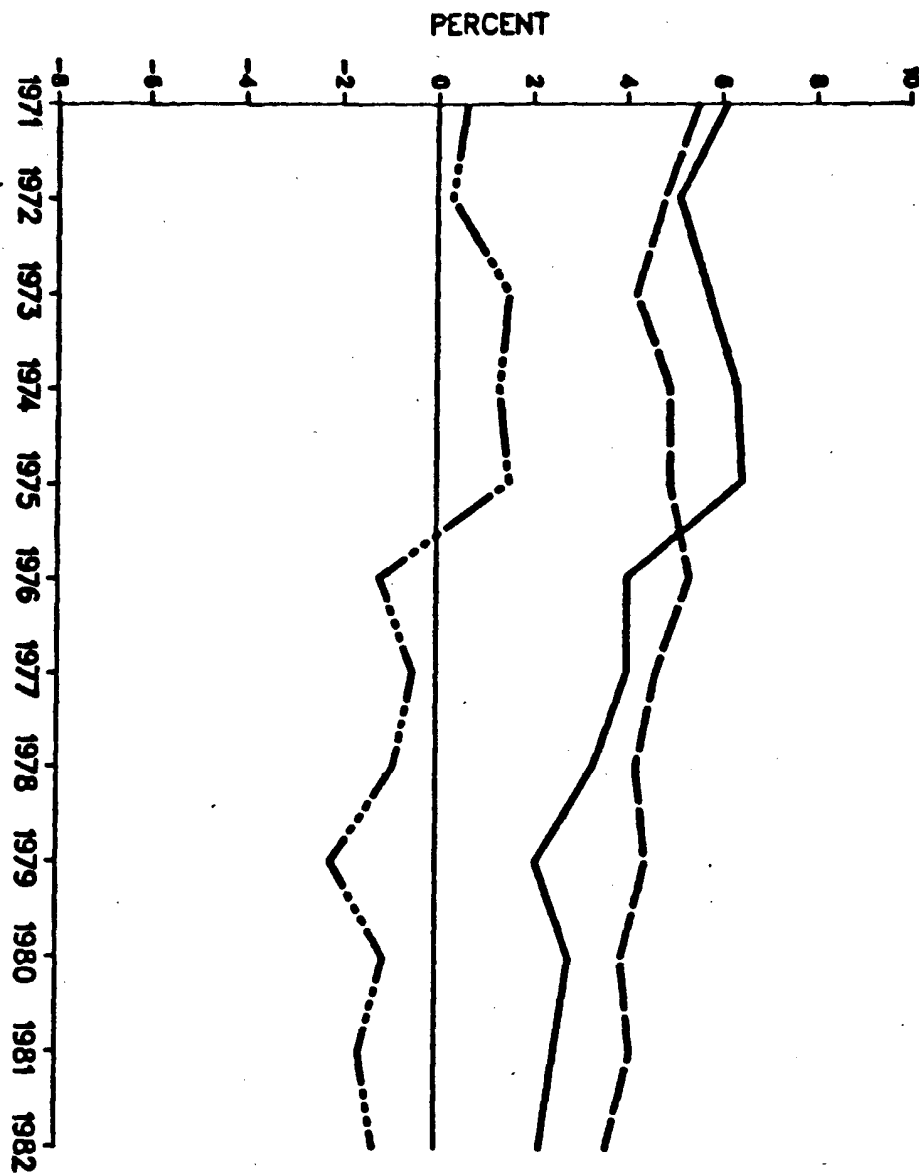


Figure 2
GROWTH IN OUTPUT, INPUTS, AND
PRODUCTIVITY IN SOVIET INDUSTRY



Legend
 OUTPUT —
 INPUTS - -
 PRODUCTIVITY . .

of growth, oil production in the USSR has begun to level off, although--as explained below--the prospects for the future are considerably better than we once thought. Production of oil (including gas condensate) has inched forward during the current five-year planning period and now stands at 12.4 million barrels per day (b/d). While gas output grew rapidly in 1981 and 1982, raw coal output increased in 1982 for the first time since 1978.

Widespread shortages of raw materials were a major reason for the marked slowdown in industrial production in 1981-82 (figure 3). Declining growth in production of coal and its deteriorating quality, for example, hurt electric power and ferrous metallurgy. Shortages of electric power, in turn, impaired the performance of industrial power customers, and an insufficient supply of steel products contributed to the lower growth in machinery production. Shortages of coke and refinery byproducts also hindered production of important chemicals, curtailing production in the interdependent branches of the chemical industry.

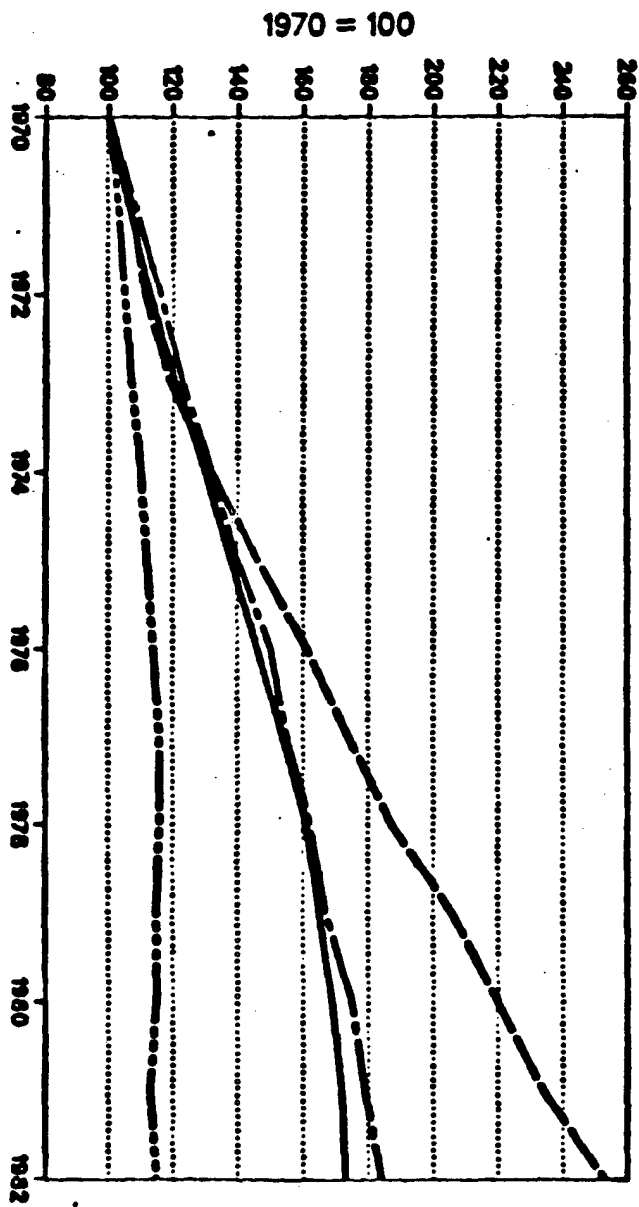
Machinery. Stagnation in the output of rolled steel products in 1981-82 held back growth in the machinery branch of industry. Machinebuilding is a pivotal sector, producing military hardware as well as consumer durables and machinery for investment. The low rate of growth of machinery output--only 3.2 percent annually during 1981-82--is about half the rate planned for 1981-85 and by far the lowest since World War II.

Even this slower growth of machinery output depended in part on rising imports of rolled ferrous metals. Imports of steel

Figure 3

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USSR: PRODUCTION OF ENERGY, 1970-82



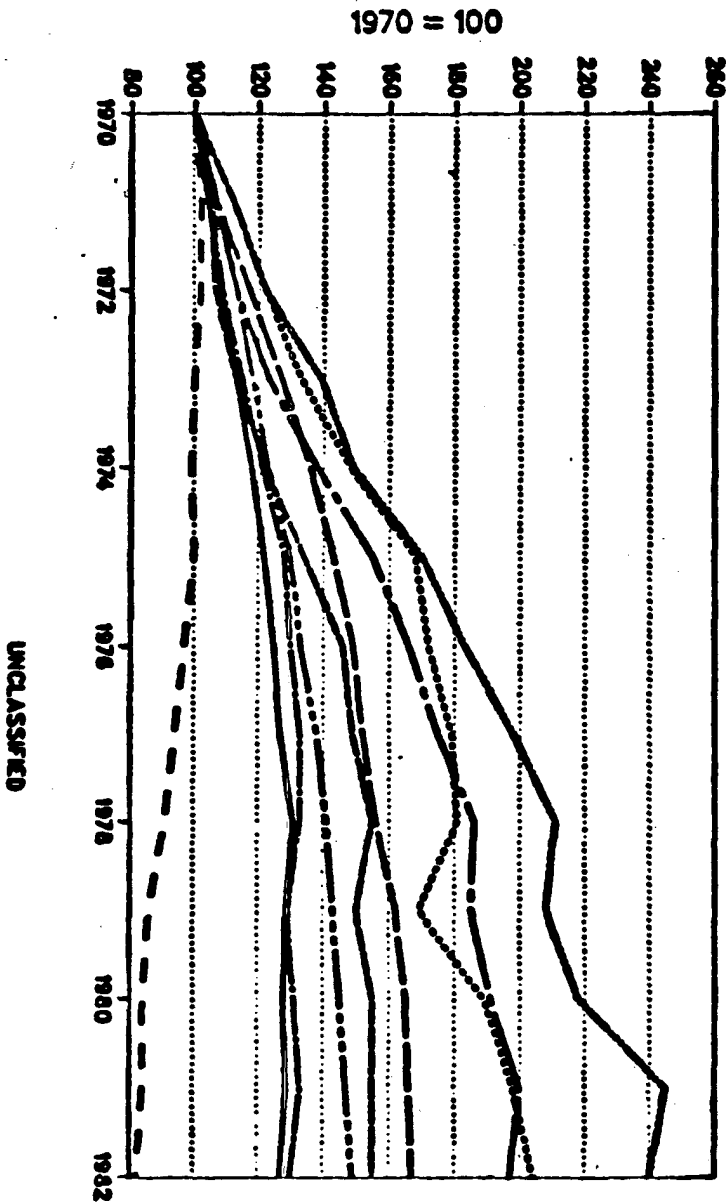
Legend
 OIL ———
 GAS - - - -
 COAL
 ELECTRICITY - . - .

UNCLASSIFIED

Figure 3 (cont.)

UNCLASSIFIED

USSR: PRODUCTION OF INDUSTRIAL MATERIALS, 1970-82



UNCLASSIFIED

Legend

- CRUDE STEEL
- ALUMINUM
- COPPER
- SULFURIC ACID
- MINERAL FERTILIZER
- CAUSTIC SODA
- PLASTICS
- CEMENT
- LUMBER

products, for example, totaled \$5.3 billion dollars in 1982. The Soviets also stepped up imports of machinery and equipment from the West and from Eastern Europe.

The hard choices on resource allocation facing Andropov are most evident in the machinery sector. The share of machinery and equipment in total investment has been rising as part of a strategy that emphasizes increased renovation and modernization and less new construction. This share, in fact, climbed from about 33 percent in 1975 to roughly 38 percent in 1981 and is planned to increase to more than 42 percent in 1983. At current levels of investment, the use of machinery and equipment for domestic investment is rising by as much as 7-9 percent per year. Meanwhile, the regime would like to push production of consumer durables so as to reduce some of the unsatisfied demand in consumer markets. But the 3-percent average annual growth of machinery output achieved in 1981-82 suggests that the investment-defense-consumer competition for machinery products will become increasingly fierce.

The pressure on allocations to investment and the consumer could be eased in the near term in two ways: by holding down the growth in production of military hardware and by increasing net imports of machinery. In the longer term, more investment in the machinery sector and its supporting branches is needed.

Consumer Goods. The growth of output in light industry and food processing during 1981-82 paralleled that of industry as a whole. Despite large imports of grain, sugar, and other farm products, shortages of agricultural raw materials contributed to

the weak performance of food processing and (to a much lesser extent) of light industry in 1981-82--although the impact on overall industrial performance was not large. Difficulties in attracting and retaining a qualified work force and low worker morale also constrained production. Compared with other industrial sectors, average wages in these two branches are lower and working conditions poorer.

Agriculture

The value of agricultural output, almost the same in 1981 as in 1980, increased by somewhat more than 3 percent in 1982. USDA estimates grain production at 180 million tons last year--an increase of about 20 million tons over 1981 but some 55 million tons short of plan. In the crucial livestock sector, meat output rose only fractionally in 1982 while milk production turned upward for the first time since 1977. Production of fruits and vegetables reached record levels and output of potatoes, sugar beets, and sunflower seeds increased substantially over the depressed levels of 1981.

Despite the 1982 upturn, farm output was still nearly 7 percent below the 1978 peak-year level. In fact, the results for 1981-82 have put most of the 11th Five-Year Plan agricultural production goals beyond reach. To reach the target for grain output, for example, annual production in 1983-85 would have to average 285 million tons--nearly 50 million tons greater than the record crop of 1978.

Transport

A substantial share of the responsibility for the falloff in industrial growth must be assigned to bottlenecks in the transportation of both raw materials and finished products. Plants were shut down intermittently, production lines were disrupted as machines and workers stood idle for lack of raw materials, and finished products piled up on loading docks. Total freight turnover, which had increased at an annual rate of 3.5 percent during 1976-80, actually fell by 0.2 percent last year.

The principal culprit has been the railroads, which shoulder the major part of the transportation burden in the USSR. The railroads are approaching the limit of their capacity to move ever more freight on the existing network with existing technology. Shipping natural resources from extraction areas in Siberia to processing and production centers in the Western parts of the USSR, in particular, has increased the strain on the railroads.

Consumer Well-Being

As Andropov noted in his early speeches, much remained to be done in the area of consumer welfare when he took office. According to our estimates, total per capita consumption increased in 1981 by about one percent--but then declined in 1982 by almost one percent. The official figures released by the Soviets confirm that in 1982 the USSR's standard of living at best barely held its own:

-- "Real per capita income"--a constant-price measure of consumption minus some services--levelled off.

-- Per capita retail sales (in constant prices) declined by more than $\frac{1}{2}$ percent.

Meanwhile, the availability of quality foods declined generally. Per capita meat consumption, for instance, was down slightly in 1982 from its peak 1979 level.

Because food accounts for the largest share of the Soviet family budget and shortages must be dealt with on a daily basis, changes in food supplies are the Soviet citizen's leading barometer of his standard of living. Fearing widespread consumer dissatisfaction, the regime took steps to minimize the impact of food shortages on worker morale and productivity. The system of special distribution of foodstuffs through the workplace (which originated in the late 1970s and is considerably more extensive than the traditional system of special stores for selected elites) was substantially expanded.

Some signs of unrest--such as short-lived work stoppages--occurred during 1981-82, but expressions of discontent generally were contained or averted. Faced with long lines at state outlets, consumers dealt with the shortages in ways that did not threaten the regime--by buying higher-priced foods in the officially sanctioned free markets, for example, and through barter and black-market activity.

Defense

The discussion above centered on the general performance of the Soviet economy during the last two years. The issue of

Soviet military expenditures requires a longer-term focus. Our approach to defense-spending estimates yields much more confidence in medium- and long-term trends than year-to-year movements. In addition, we have recently revised our estimates in this area.

Our latest estimate of Soviet military expenditures indicates that defense spending in constant 1970 ruble prices continues to increase.* Unlike our past estimates, however, the new evidence incorporated in our present estimate indicates that in at least one major area, procurement of military hardware, Soviet expenditures have leveled off since 1976.

Total Soviet defense costs, measured in constant 1970 rubles, grew at an average annual rate of 4-5 percent during 1966-76 (about the same as reported in earlier estimates). Our new estimate, however, shows that like overall economic growth the rise in the total cost of defense since 1976 has been slower--about 2 percent a year. The rate of growth of overall defense costs is lower because procurement of military hardware--the largest category of defense spending--was almost flat in 1976-81.

New information indicates that the Soviets did not field weapons as rapidly after 1976 as before. Practically all major categories of Soviet weapons were affected--missiles, aircraft, and ships. This phenomenon was only partially offset by the

* We estimate Soviet defense spending annually in rubles to gain an appreciation of the Soviet defense "burden". See appendix A for a discussion of the methodology used.

tendency of newer, more sophisticated weapon systems to cost more. Costs in all other categories of Soviet defense continued to grow at historic rates over the entire 1972-81 period. Operations and maintenance costs, for example, grew by 3-4 percent annually; personnel costs increased by slightly less than 2 percent a year.*

We have only very preliminary estimates available for 1982. They indicate, however, that the trends in both total defense expenditures and procurement costs that we have observed since 1976 are continuing. The growth in total expenditures still appears to be considerably below the long-term average, and procurement spending remains roughly unchanged although at a high level, when measured in constant 1970 prices.

It should be stressed that trends in Soviet military spending are not a sufficient basis to form judgments about Soviet military capabilities, which are a complex function of weapons stocks, doctrine, training, generalship, and other factors important in a potential conflict. The cost estimates are best used to identify shifts in priorities and trends in resource commitments to military programs over an extended period of time. Moreover, the spending estimates do not give an appreciation of the large stocks of strategic and conventional

* Our latest dollar estimates show the same trends since they are based on the same estimates of quantities of Soviet weapons. The estimated dollar costs of Soviet defense activities grew at slightly less than 2 percent over the 1976-81 period, a percentage point below the long-term average. Procurement costs in dollar terms did not grow during the 1976-81 period. We estimate Soviet defense spending in dollars to make comparisons with corresponding US outlays. See appendix B for a discussion of our dollar estimates.

weapon systems already deployed. Indeed, current levels of spending are so high that despite the procurement plateau noted, the Soviet forces have received since 1975 about 2,000 ICBMs and SLBMs, over 5,000 tactical combat and interceptor aircraft, 15,000 tanks and substantial numbers of major surface combatants, SSBNs, and attack submarines.

The impressive dimensions of the Soviet resource commitment to military activities also are very visible in comparisons with US defense costs. Our latest comparisons of US and Soviet defense programs show that despite somewhat slower growth in recent years the costs of Soviet defense activities still exceed those of the United States by a large margin. In 1981 the dollar costs of Soviet defense activities were 45 percent greater than US outlays; procurement costs alone were also 45 percent larger. A comparison in ruble prices shows that Soviet defense costs were 25 percent higher than those of the United States.

The slowdown in the growth of military procurement cannot be explained by any single factor. Initially, at least, the absence of growth in military procurement might have been attributed to natural lulls in production as older weapon programs were phased out before new ones began. The extended nature of the slowdown, however, goes far beyond normal dips in procurement cycles.

The continued slow growth since the late 1970s seems related to a combination of complex factors including technological problems, industrial bottlenecks, and policy decisions. Some funds budgeted for procurement may have been directed instead to research, development, testing, and evaluation (RDT&E) during

this period because of the increasing complexity of weapon systems being researched.

The burden of defense in the USSR--the share of GNP devoted to defense--remained roughly constant at 13-14 percent through the 1970s because defense and GNP have grown at about the same rate. We had previously forecast that the defense share would increase by one-percentage point in the early 1980s.

Foreign Trade

After coping successfully with an earlier runup of hard currency debt, the USSR was hit in 1981 by a rising agricultural import bill and the need to provide hard currency assistance to Poland. The volume of grain purchases jumped by more than one-third, to 39 million tons. The deficit on merchandise trade rose to \$4 billion, compared with \$2.5 billion in 1980. The gap would have been even higher had Moscow not pushed exports (mainly oil) and trimmed imports (mainly machinery and equipment) in the last half of 1981. For the year as a whole, the Soviets managed to maintain the value of oil exports at the 1980 level as a 5-percent oil price rise offset the drop in volume.

The Soviets improved their hard currency payments position in 1982. By strongly pushing oil exports and holding down imports, the USSR slashed its hard currency trade deficit to \$1.3 billion, or one-third of the deficit incurred in 1981. Exports were up 10 percent, with all of the rise coming from the sharp jump in oil sales. Moscow reduced the value of imports slightly by cutting purchases of Western grain (down 3 million tons), chemicals, and nontubular steel. Imports of machinery and

equipment and of steel pipe rose sharply, however, largely as a result of deliveries for the Siberia-to-Western Europe gas pipeline.

The easing of its hard currency payments position, coupled with a probable fall in hard currency assistance to Poland, allowed Moscow to reduce its hard currency debt in 1982. By the end of the year, gross debt had fallen by an estimated \$800 million and totaled \$20.1 billion. Assets in Western banks were a record-high \$10 billion at the end of last year.

Moscow's foreign trade policy for 1981-85 calls for an increasing share of its trade to be conducted with Communist countries. This policy probably reflects several factors: (1) a desire to hold down hard currency debt; (2) a long-standing policy of self-sufficiency, particularly an aversion to becoming too dependent on the West; and (3) a reaction to US trade embargoes that were imposed following the USSR's invasion of Afghanistan.

USSR: Percentage Growth in Foreign Trade^a

	<u>1981</u>	<u>1982</u>	<u>1981-85 Plan</u> ^b
Total trade	4.2	8.2	4.0
With Communist countries	2.3	5.3	5.6
With non-Communist countries	7.8	10.8	2.3

^a Calculated from Soviet data expressed in constant prices.

^b Average annual rate of increase.

In point of fact, Soviet trade turnover grew more rapidly with the non-Communist countries in both 1981 and 1982. Paradoxically, however, Soviet net gains from trade with Communist countries (measured by net imports in constant prices) rose substantially--because of a leveling off of real exports--while gains from trade with the West declined. The Soviet surplus on trade with all non-Communist countries rose from 1.9 billion rubles in 1980 to 3.2 billion rubles in 1982 (including major weapons exports to LDCs). At the same time, Moscow's 1980 surplus of 3.2 billion rubles with the Communist countries decreased to a 400-million ruble deficit (in 1980 prices) in 1982. All categories of Soviet exports to Communist countries except machinery and equipment leveled off in real terms in 1982. Sales of machinery and equipment declined because of a sharp reduction in sales to Poland; Warsaw cut back drastically on investment programs and could not absorb the machinery.

Reasons for the Sluggish Performance

The sluggish performance of the Soviet economy in 1981-82 partly reflected circumstances that were beyond the leadership's control. It stemmed mainly, however, from resource-allocation decisions made earlier by the regime and from long standing flaws in the USSR's system of planning and administration.

External Factors

Agricultural production in the USSR is hostage to weather conditions to a far greater degree than in most developed economies. Poor weather, drought in particular, continued to plague the farm sector during 1981-82 as the USSR suffered its

third and fourth consecutive poor grain harvests. To a lesser extent, harsh weather also hindered construction, transportation, and industry, especially the production of electric power--a input critical to all sectors of the economy.

Economic performance was affected also by a reduction in the number of people entering the labor force. Increments to the working-age population have been declining since the mid-1970s because of the lower birth rates of the 1960s, an increase in the number of workers reaching retirement age, and a rising mortality rate among males in the 25-to-44 age range. The falloff became pronounced in 1980, and increments will remain very low throughout the decade.

A third limiting factor beyond the leadership's control was the continued escalation of the cost of extracting, refining, and transporting fuels and raw materials. Even though the Soviet Union is endowed with enormous quantities and a wide variety of raw materials, these materials in many instances have become increasingly inaccessible and the cost of exploiting them has risen sharply:

- The economy has become increasingly dependent on the Siberian areas of the country for fuels and other raw materials. Developing these new areas requires large capital investments, particularly in construction.
- Most of the new areas require social overhead capital--roads, housing, cultural, and service facilities--in addition to the basic facilities for exploration and exploitation.

-- The declining quality of readily available raw materials has pushed up capital requirements because of the cost of enriching poor-grade minerals and ores.

Policy Errors

Some of the difficulties of the Soviet economy in 1981-82 were the result of deliberate policy choices, as the earlier discussion of developments in industry and transportation suggests. At a time when investment needs were rising rapidly, the 1981-85 Plan called for investment spending to grow on average by less than 2 percent per year. This was by far the lowest planned increase in the post-World War II period. The marked slowdown, while partly forced upon the leadership by production constraints in the capital goods industries, also reflects a conscious attempt to switch to a more intensive pattern of growth--that is, growth through more efficient use of resources and more rapid technological progress.

In essence, the planned growth in GNP and its component sectors was predicated largely on increases in productivity. Increasing the efficiency of new plant and equipment, for example, is one of the central goals of the plan. But the assumption that slower growth in investment would be consistent with rising productivity did not prove out. Capital productivity in industry continued to decline at the same annual rate of 4-5 percent experienced in the last half of the 1970s.

Soviet planners also have made costly errors in allocating investment resources. In some cases, investment in large-scale capacities for improving the quality of raw materials such as

iron ore has been emphasized at the cost of modernizing capacities for finished products. In other cases, the planners have increased the Soviet capacity for manufacturing intermediate and finished products while neglecting to develop the raw material supplies essential to ensuring full use of that capacity. Many of the domestic bottlenecks experienced in 1981-82 were the result of such planning mistakes.

Systemic Problems

Economic growth is also held back by the USSR's system of planning and managing the economy. Economic planning and management are highly centralized, with key resources allocated by administrative fiat. As the economy has grown in size and complexity, it has become more difficult to manage. Moreover, as in previous plans, many of the key 1981-85 goals are unrealistic, based on projected productivity increases that cannot possibly be met. The result is to intensify the pressure on lower level managers to protect themselves through such practices as the hoarding of material and labor resources--and thus to aggravate already serious bottlenecks.

Economic Policies Under Andropov

As the first two years of the 1981-85 Plan neared completion, it must have become clear to Soviet leaders that their economic strategy was not working. The formulation of the 1983 Plan, undertaken before Brezhnev's death, provided an opportunity to make midcourse corrections in Soviet economic policies. Even as late as November 1982, Andropov's sudden assumption of power offered a chance for change. Nonetheless, on

the basis of information published on the 1983 plan and what has happened since, we conclude that Andropov is still holding mainly to the course set by Brezhnev. The possible exception is investment policy.

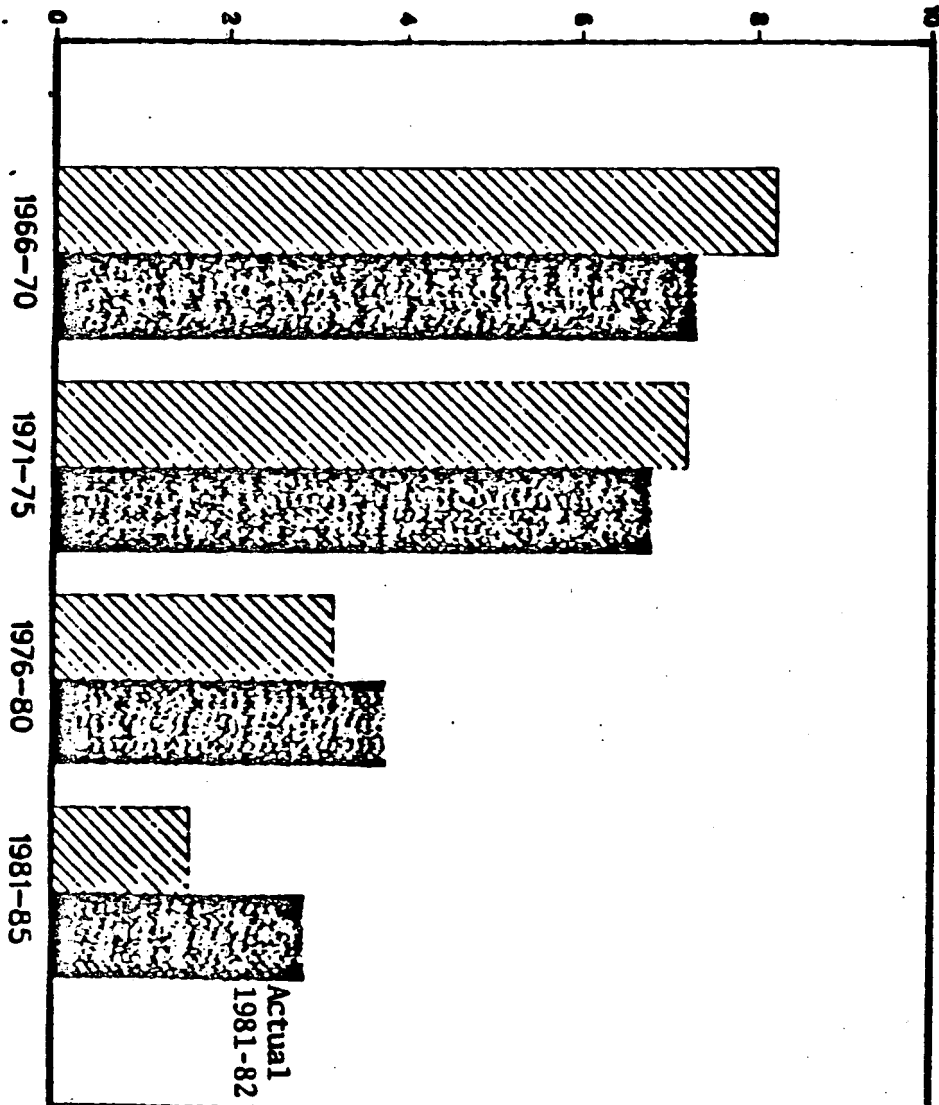
Investment

Because capital formation is so important in determining the directions of economic development, investment plans provide particularly useful clues to Soviet economic policy. Although information for 1983 is sparse, mid-year reported results do raise the possibility that the original five-year plan for total investment has been changed.

The investment policy laid down in the 1981-85 Plan called for the lowest rate of investment growth in the post-World War II era--about 1 1/2 percent per year on average. Actual investment expenditures, however, have grown somewhat faster than planned--by roughly 3 percent in 1981 and 1982, respectively (figure 4). Investment was scheduled to rise by nearly 2 1/2 percent in 1983, again slightly above plan. But results for the first six months indicate that investment may be growing at a much faster rate. State capital investment, which makes up about nine-tenths of total capital investment, increased by 6 percent compared with first-half 1982.

The step-up in investment could signify a change in economic policy. Indeed, the premise that increases in productivity required by components called for in the 1981-85 Plan are compatible with a slowing rate of investment has been challenged vigorously and publicly in the Soviet Union over the last two

Figure 4
USSR: NEW FIXED INVESTMENT
(AVERAGE ANNUAL PERCENTAGE RATE OF GROWTH)



Plan
Actual

years. The sharp increase in investment growth in first-half 1983 could mean that the proponents of higher investment spending are winning out. In any case, much of the acceleration has been made possible by the industrial recovery (discussed below), which permitted increased production of machinery and equipment and construction materials. Some of the growth in investment is also the result of an increase in net imports of machinery and equipment in 1982 that are just now being assimilated into industry. The volume of imports of machinery jumped by about one-third in 1982.

Defense

Andropov's position on the share of resources that should go to the military is unclear. In his November 1982 plenum speech, he stated only that "defense requirements as usual have been sufficiently taken into account." During a highly-publicized visit to a Moscow machine-tool factory, however, he implied that a healthy economy is a precondition of military power--suggesting that defense could no longer count on retaining unquestionable priority in the distribution of resources.

The little evidence that is available indicates Andropov has not accelerated Soviet military spending. For example, the leveling off of weapons procurement in recent years has been accompanied by an increase in the share of machinery allotted to civilian uses. That trend, as noted above, appears to have continued in both 1982 and 1983. While we cannot be sure what Andropov's policy is, or will be, Soviet military capabilities will still increase substantially over the next several years

even if the rate of growth of procurement of military hardware does not increase. The USSR is already investing so much in military hardware that merely continuing procurement at the existing level would provide very large annual increments in holdings of military equipment.

Agriculture

There also are no indications of significant change in agricultural policy since Andropov took power. Plans for crop production in 1983 have been set largely at the levels indicated originally in the 1981-85 Plan, and the General Secretary also appears to have thrown his full support to Brezhnev's Food Program.

Mikhail Gorbachev, the Soviet agricultural czar, has been lobbying hard for the more rapid and effective implementation of the part of the program dealing with structural reorganization--the so-called RAPOs.* Soviet press reports and conversations of Soviet officials with Westerners indicate that the RAPOs have been resisted by the ministries and state committees involved. As a result, lack of control over service organizations that supply equipment, repair services, agricultural chemicals, and construction services has severely hampered the effectiveness of the RAPOs. To rectify the situation, the Andropov regime issued a decree in late July which attempts to merge the interests of farms and service organizations by tying rewards for service

* A RAPO is a self-financing organization that includes all farms, service agencies (e.g. repair centers), and processing enterprises in a given district.

organizations to growth in the output and productivity of the farms that they serve.

As a means of providing better incentives for agricultural workers, Gorbachev also is actively promoting the collective contract system--an aspect of the Food Program that received relatively little attention before Brezhnev's death. In this system, farm workers are rewarded according to the size of the harvest rather than receiving hourly or piece work rates.

Andropov's support of the Food Program is also indicated by the continued large share of investment allocated to agriculture and the sectors supporting it in 1983. Although some Soviet officials believe that agriculture is already receiving a disproportionate share of the economy's resources, investment for farms and supporting industries is slated to rise by nearly 4 1/2 percent this year--a higher growth rate than that scheduled for total investment--and will amount to about one-third of total investment. This is the share of investment resources that Brezhnev promised in the 1980s at the special Central Committee plenum on agriculture in May 1982.

One aspect of the Food Program that Andropov has been slow to embrace is the call for increased private plot production--which now accounts for about one-fourth of total Soviet agricultural output. Little has been done, for instance, either since Andropov took over or before, to assure private farmers supplies of much needed feedstuffs, seeds, fertilizers and pesticides, and small machinery and farm implements. Still, in an April speech to regional party leaders, the General Secretary

implied that every rural family ought to raise livestock. Because agriculture will have difficulty in meeting its goals over the next decade, Andropov is not likely to curtail private agricultural activity, despite his apparent lack of enthusiasm for it on ideological grounds.

Consumer Goods and Services

The new regime has shown concern for the welfare of the population in a variety of ways. First, a flurry of decrees has been published this year calling for improvements in the level of daily services and in the supply of consumer goods provided to the population:

- A resolution was adopted by the Central Committee in February demanding that ministry, department, and union republic officials perform better in constructing housing and consumer service facilities.
- A joint Central Committee-Council of Ministers resolution was published in March calling for an expansion of the number of repair and cleaning shops; more personal services such as hairdressing, film developing, and the rental of consumer durables; and the establishment of more convenient working hours in the service sector.
- A joint Central Committee-Council of Ministers decree passed in late April discusses "the additional production" of consumer goods, contains unusually blunt warnings to consumer ministries to shape up, and instructs several state committees to prepare new measures to improve planning, incentives, and price-setting in the consumer

goods sector.

The priority the leadership has given the Food Program in part also mirrors high level preoccupation with living standards. Judging from Soviet press reporting on Politburo meetings, for instance, the Andropov government has devoted more time to agriculture than any other domestic issue. The recent reorganization of the Central Committee to include a separate Department of Light Industry and Consumer Goods also suggests that consumer interests are being given greater attention. Finally, the regime is continuing the campaign initiated under Brezhnev to increase the production of consumer goods in heavy industry and may intend to import more machinery for use in consumer industries.

Nonetheless, the regime has little room for maneuver on consumer issues until the Food Program pays some return and until more investment can be spared for the production of soft goods and consumer durables. In his June plenum speech, in fact, Andropov stressed that improvement in the standard of living will be slow. Increases in income, he has maintained on several occasions, must be closely linked to increases in labor productivity.

Foreign Trade Policy

The foreign trade plan for 1983 suggests that Moscow still is bent on increasing trade with its Warsaw Pact partners and other Communist countries at the expense of trade with the West. In his annual report to the Supreme Soviet, Nikolay Baybakov, Chairman of Gosplan, said that trade with Socialist

countries would increase nearly 8 percent--more than double the annual rate of the past two years--and would reach 58 percent of total Soviet trade turnover. He implied that trade with capitalist countries would drop about 4 percent. Aside from the desire to reduce the reliance of CEMA countries on the West, a likely explanation for this objective is that Moscow is planning on some decline in its hard currency earnings capacity this year (perhaps because it expects reduced earnings from exports of oil and arms, both of which hit record highs in 1982) and is purchasing less grain.

Reductions in Soviet shipments of oil to Eastern Europe suggest that East European countries may not receive increases in deliveries of raw materials from the USSR. It also appears that the Soviet Union will pressure its Warsaw Pact allies to reduce their deficits on bilateral trade with the USSR, and boost their exports, especially those of higher quality goods, to the USSR. But the East Europeans--facing critical economic and financial problems of their own--will be neither willing nor able to provide Moscow much assistance in providing substitutes for imports from the West. The East European countries would be hard pressed to increase their exports of machinery and equipment and of manufactured consumer goods even more than now planned.

If the East Europeans cannot boost their exports to the Soviet Union enough to eliminate the deficits, Moscow could help itself by scaling back its deliveries to Eastern Europe of goods marketable in the West. Because further cutbacks in raw materials deliveries would be a serious blow to Eastern Europe,

we have thought that the Soviets would be reluctant to take such action. On the other hand, Moscow may be more willing now than in the past to squeeze Eastern Europe. Martial law appears to have controlled tensions effectively in Poland, and there has been little overt discontent in any of the other East European countries despite harder economic times.

Other Initiatives

The major new element of economic policy this year is the "discipline campaign." Andropov does not believe that greater discipline alone will cure the economy's ills, but he sees it as a necessary beginning. He apparently is confident that coercion or the threat of coercion can increase worker discipline and that greater discipline will raise productivity.

The campaign is designed to tighten discipline all around, including management discipline. Andropov has, in fact, fired some allegedly corrupt or incompetent officials. The Minister of Railways, for instance, was fired shortly after Brezhnev's death. Minister of Internal Affairs Nikolay Shchelokov also was removed from his post at the plenary session of the Central Committee in June, reportedly because of involvement in corrupt activities. In their places, Andropov has brought in some younger, better-educated, and perhaps more innovative officials. To date, however, the campaign appears to have been directed primarily against blue-collar workers. In particular, the regime has sought to compel workers to put in a full day's work. Both internal security forces and militia teams are being used to search for workers absent from their jobs without

permission.

A second phase in the campaign was introduced this August. A new decree introduced sanctions (loss of vacation, loss of pay, and even dismissal) against workers AWOL or drunk on the job and offered financial rewards to more productive laborers. Judging from leadership statements, additional measures to reinforce labor's commitment to better job performance are likely to be forthcoming.

In the more ideologically sensitive area of reforming the planning and management of the economy, the new regime has introduced some limited measures designed to decentralize decisionmaking in both industry and agriculture. A mid-July joint party-government decree is the most comprehensive step in this direction to date. This "economic experiment" involves five industrial ministries and will begin in January 1984. The decree gives enterprise management more latitude in using investment and wage funds, largely in an effort to spur technological change and innovation. It also ties worker and management benefits more closely to enterprise performance, with contract fulfillment as a key success indicator.

Andropov's endorsement of small labor teams in industry, construction, and agriculture also qualifies as an attempt to increase local initiative in the decisionmaking process, this time at the lowest production level. The brigade organization of industrial labor and collective contract system for farm workers allow the enterprises increased flexibility but at the same time make profits and wages more dependent upon final results.

The Andropov leadership has also instituted a new law on labor collectives--the first nation-wide labor code. Adopted by the Supreme Soviet session in June, it calls for increased worker participation in management. It does not, however, materially expand workers' rights or give them a significant managerial role. Mainly, it increases labor obligation to help implement plans and campaigns imposed from above. The attempt to represent the law as giving workers a voice in economic management suggests an effort to improve worker morale--and productivity--by creating the illusion of greater power for labor.

Assessment of Andropov's Policies

Has the Soviet economic game plan changed in any essential way since Yuri Andropov replaced Leonid Brezhnev? The answer is no. Continuity has been far more pronounced than change. Soviet planners, for instance, are not trying to put the economy back on the five-year plan track with the possible exception of agriculture. The growth target for industrial production in the 1983 plan (3.2 percent), for example, is well below the average annual rate of growth implied by the 1981-85 Five-Year Plan (4.7 percent). Although there may be new emphasis on some of the economic policies inherited from the previous regime, the central core of policies laid down by the new leadership is within the bounds of those established during the Brezhnev years.

-- One feature of Andropov's investment policy--more renovation and modernization and less new construction--is an intensified version of an investment strategy that has been followed for seven years with little success. There

is nothing new in it; it was a main feature of the 1976-80 Plan and a central part of the current five-year plan.

-- In one area, the priority given to overall investment, Andropov's policy may be different from Brezhnev's.

Investment has been stepped up in 1983, although we cannot be certain that its priority will be sustained.

-- Andropov has stuck with the Food Program as the answer to agricultural problems.

-- In consumer affairs, there has been no real change or innovation. Andropov has exhibited solicitude for consumers, but has not backed up that concern with new programs or more resources for consumer industries.

-- Nor has Moscow's trade policy or the structure of trade changed much under Andropov. More trade with the West would seem helpful in easing Soviet economic strain since East European products are, for the most part, not viable substitutes for Western goods.

-- The changes in planning and management announced so far all have roots in the Brezhnev era if not earlier.

Andropov's has retained strong central control over the key economic decisions--for example, price formation--while tolerating some devolution in day-to-day decisions.

The new trend we have observed in military procurement, together with continuing domestic economic problems and the recent political succession, does raise important questions about the future of the Soviet defense effort. We previously had

estimated that defense spending would continue to grow in real terms through at least 1985. We still consider that likely. The question is whether the Soviets will rebound from the procurement slowdown, so that defense spending will return to (or even exceed) the 4 to 5 -percent average annual growth rate of 1966-76, or whether little or no growth in procurement will slow the increase in overall expenditures for some time. Because we do not fully understand the causes of the slowdown, we cannot provide a reliable answer.

The new regime, which apparently came to power with the support of the military, may well be under pressure to speed up defense spending. For example, in the first three years of this decade we believe the Soviets have already had as many systems under development as in each of the previous two decades. Steady expansion of production floorspace has occurred since the mid-1970s providing the Soviets with the potential to translate the new systems into deployments in the field. Any major effort to sharply accelerate the level of military procurement, however, could make it even more difficult to solve the fundamental economic problems facing the Soviets. It would require lower civilian investment and slower growth or even a fall in per capita consumption and could, over the long run, erode the economic base of the military-industrial complex itself. Moreover, we do not know how quickly the Soviets will be able to overcome the problems that may have contributed to the recent procurement slowdown: some appear to be pervasive and will be difficult for the Soviet system to correct. Regardless of how

the leadership decides to approach the resource allocation issue, it will not be able to avoid it for long. The planning cycle for the 12th Five-Year Plan--1986-90--is already under way.

Outlook for 1983

This year some of the economic pressures on the Andropov leadership should ease slightly. After two years of low growth in 1981 and 1982, the economy seems poised for a rebound in economic performance. Based on statistics available for the first seven months of 1983, we estimate that GNP will rise by 3 1/2 to 4 percent--well above the approximately 2 percent rate of growth achieved in both 1981 and 1982 and close to the 4 percent annual rate of growth implicit in the 1981-85 Plan.

All major sectors of the economy are doing better this year. After several years of steady decline, for example, industrial performance has begun to improve. Industrial production was almost 4 percent higher in the first seven months of 1983 than in the comparable period of 1982. The rebound in industry probably owes much to the better than normal winter and spring weather conditions, which permitted some rebuilding of stocks of fuels and other inputs less in demand when the weather is mild. Most important, better weather appears to have eased transportation difficulties, thus relieving bottlenecks generally.

Other factors that have contributed to improved industrial performance include recent additions to capacity, notably in steel and chemicals; managerial personnel changes; and perhaps greater effort reflecting a sense that, with the change of

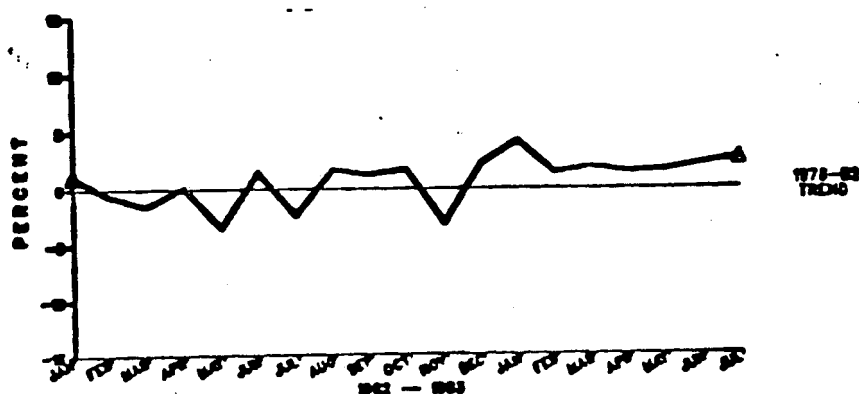
leadership, a period of drift had ended. In this connection, the discipline campaign probably played a part in the recovery from the poor performance in 1981-82 by eliciting greater effort from the work force and putting some managers in fear for their jobs.

The role of the Andropov administration in the industrial recovery seems to be minor, however. The production gains reported thus far reflect in large part recovery from the poor performance at the beginning of 1982. Output of most industrial commodities actually began to pick up on a seasonally-adjusted basis in mid-1982, so that the overall contrast between the two years will not be so favorable to 1983 by yearend (figure 5). We estimate that industrial production will grow about 3 percent this year, somewhat higher than the 2.4 percent annual rate of growth achieved in 1981-82. Under Andropov, industrial production has returned to the growth path characteristic of 1978-82, not to the higher rates of earlier periods.

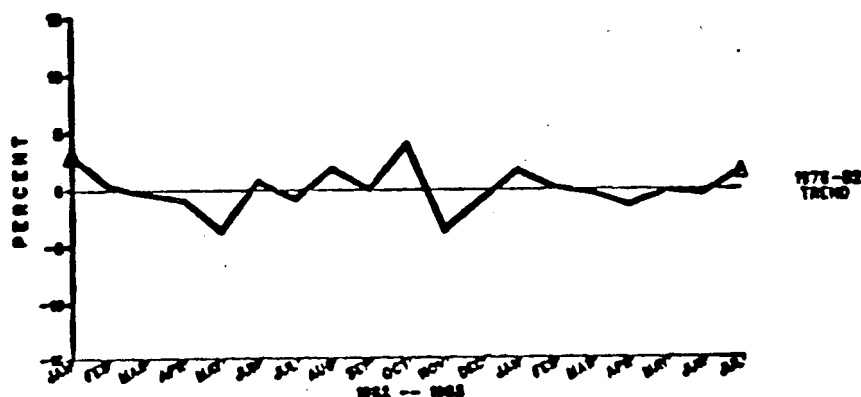
Following four consecutive years of poor agricultural performance a substantial recovery is in the cards for Soviet agriculture in 1983. We expect total farm output to increase by 7-8 percent compared with somewhat more than 3 percent in 1982 and almost no growth in 1981. Total production of farm products this year, in fact, could be roughly 1 percent above the previous high of 1978. Barring a major deterioration in weather conditions, according to USDA, a grain harvest of 200 million tons is likely, well above the estimated 158-million ton crop informally reported by the Soviets for 1981 and the 180 million

USSR: Deviation of Industrial Production From Recent Trend*

Civilian Industry



Fuels and Power



Industrial Materials

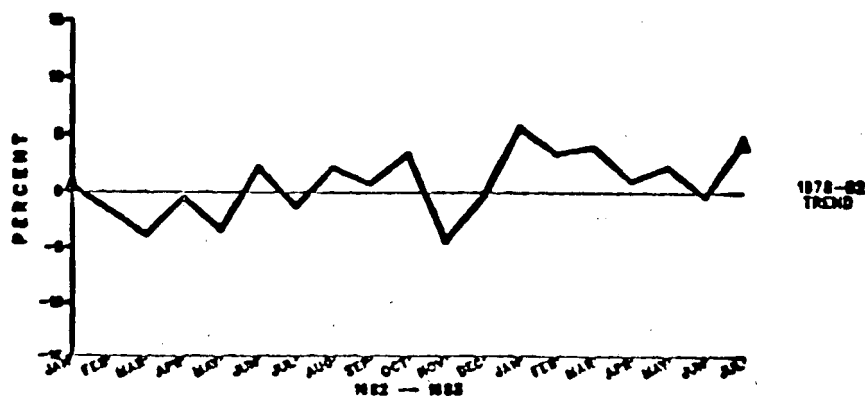
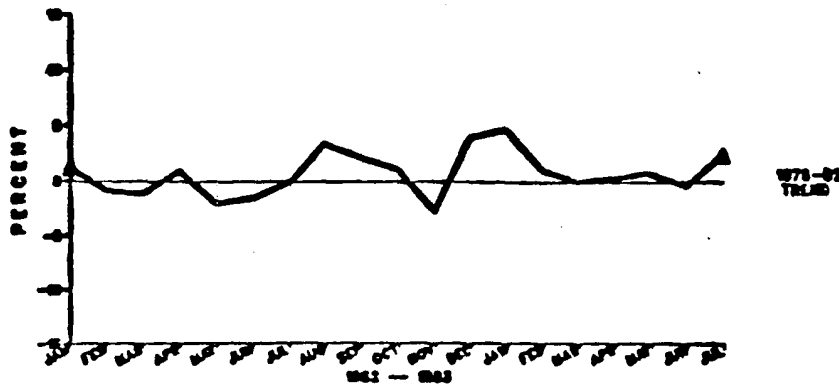
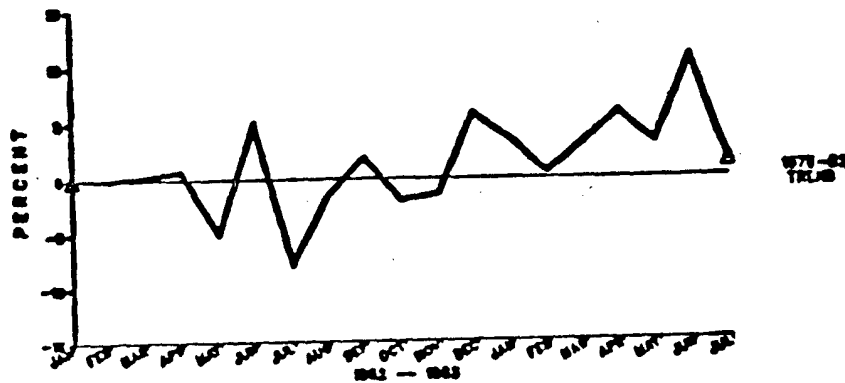


Figure 5 (cont.)

Civilian Machinery



Consumer Goods



* The monthly production indexes are calculated from a smaller sample of commodities than those represented in the annual production indexes. The average trend rate of growth shown for 1978-82 in this figure will therefore differ from those based on full-year data. Nevertheless, we believe that the samples used in extending the monthly indexes are comprehensive enough to signal changes in growth rates over time, or--as in this figure--to compare performance pre-Andropov and post-Andropov.

ton harvest estimated by USDA for 1982. Both of these estimates are well below the 1978 record of 237 million tons. The outlook for other major crops is also good. Production of sunflower seeds, sugar beets, vegetables, potatoes, and cotton is expected to exceed the average of recent years.

In the crucial livestock sector, meat output from state and collective farms--which produce about two-thirds of total Soviet meat--reached a record level during the first seven months of 1983. A number of factors were at work: (1) the quantity of forage crops harvested last fall was a record; (2) relatively mild weather last winter coupled with an early spring this year bolstered Soviet livestock feed supplies; (3) the increased availability of high-protein feeds--particularly soybean meal and single-cell protein--has improved the efficiency of feed rations this year (that is, the amount of product produced from a unit of feed). With herd numbers now at record levels, the stage is set for substantial growth in total meat production this year after four years of relative stagnation. Output could reach 16 million tons--5 percent above the 1979-82 average--if grain production reaches or exceeds 200 million tons, at least 20 million tons of grain are imported, and ample supplies of forage crops remain available through the rest of the year.

Meanwhile, the availability of quality foods has increased somewhat since Andropov came to power, although not enough to permit relaxation of the informal rationing system for selected food items. Surveys of private farm markets and state retail stores, for instance, have shown increased supplies of most

foodstuffs. Various reports also suggest that in many regions the food shortages prevalent since at least 1980 have become less severe.

The Soviets are still finding it hard, however, to provide adequate supplies of nonfood consumer goods. Retail trade turnover in real terms grew by 1 1/2 percent in the first six months of 1983 compared with first-half 1982 while the average monthly wage of workers increased by more than 2 percent. The continued low growth in retail sales is caused partly by production problems in the industries manufacturing soft goods and consumer durables. The production of textiles, for example, has been hampered by shortages of quality cotton.

Imports of nonfood consumer goods will help somewhat. Moscow bought about \$10.5 billion worth of these goods last year, almost 70 percent of them from Eastern Europe. In internal prices these purchases accounted for a substantial share of retail sales of nonfood consumer goods--about 15-20 percent.

Railroad performance has also improved markedly in the first 6 months of 1983. Freight turnover climbed to 1.8 trillion ton-kilometers, a 3.7 percent increase over first half 1982--it had fallen 2.3 percent during the same period in 1982. A number of factors may have been responsible. The relatively mild weather experienced so far this year has certainly helped. The priority attention given to the transport sector by the new leadership probably is also a factor. Politburo member Geydar Aliyev was given special responsibility for overseeing the railroads earlier this year, and a campaign to enlist industrial enterprises and

other shippers in the repair of damaged freight cars has been instituted. Still, reports of supply disruptions and delayed shipments are continuing. As in industry, the record in the second quarter of this year suggests that the initial burst of higher performance in Andropov's early months is not being sustained (figure 6). Because the problems in the transport sector cannot be resolved quickly, transport snarls can be expected to be a drag on the economy over the next several years.

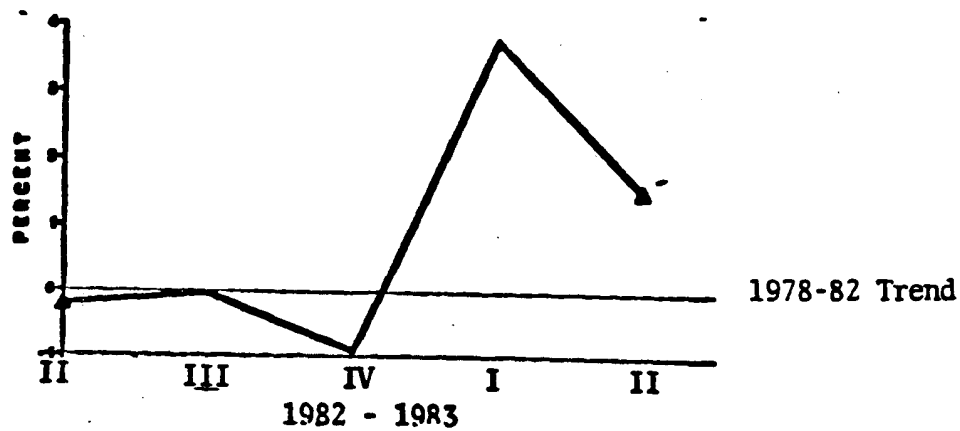
With brighter prospects in agriculture, Soviet planners will not have to worry so much for the time being about hard currency availability. Nonetheless, we believe that the hard currency trade deficit will increase slightly in 1983. In the first half of the year both exports and imports remained at about first-half 1982 levels. A drop in agricultural purchases was offset by increased purchases of pipe and machinery and equipment and of Libyan oil for resale to Soviet customers in the West. Oil sales for hard currency could remain below the 1982 level for the year as a whole, however. The USSR may feel it cannot cut deliveries to Eastern Europe again this soon.

Longer Term Outlook

A stronger economic showing this year would help Andropov politically, but it would not--in our view--foreshadow a higher growth rate over the longer term. The problems that have constrained growth since the late 1970s have not gone away; some of them, in fact, are just now reaching peak severity.

Figure 6

USSR: Deviation of Railroad Freight
Turnover From Recent Trend



Slower Growth in Labor and Fixed Capital

For example, the increment to the working age population--about 389,000 persons--will be lower this year than at any time in the last two decades (figure 8) and will continue to diminish through 1986. Growth of capital stock also will slow during the 1980s because of the slowdown in investment that has occurred since 1975. Unless plans for investment change drastically, we project that the supply of labor and capital to the economy in the 1980s will rise by only $2\frac{1}{2}$ percent per year during the remainder of the 1980s compared with an average annual increase of nearly 4 percent in 1970s.

Given the slower growth of labor and capital, elevating growth above the recent trend rate of about 2 percent a year would require a dramatic reversal of the prevailing trend in productivity. For example, sustaining the GNP growth rate of 4 percent per year that prevailed in 1971-77 would be possible only if productivity increased by nearly $1\frac{1}{2}$ percent per year. In fact--as the tabulation below shows--the combined productivity of inputs of labor, capital, and land has been decreasing for over a decade:

	<u>Average Annual Percentage Change^a</u>			
	<u>1966-70</u>	<u>1971-75</u>	<u>1976-80</u>	<u>1981-82</u>
GNP	5.3	3.7	2.7	2.1
Inputs of labor and capital	4.1	4.2	3.6	3.1
Factor productivity	1.1	-0.5	-0.8	-1.0

^a From appendix C, Table 14.

The likelihood that the Soviets can recapture the productivity gains of the late 1960s is small.

- The discipline campaign may be exacting a somewhat greater effort from Soviet workers, but, judging from numerous reports of half-hearted enforcement and of workers often ignoring appeals and threats designed to make them work harder and longer, the long term impact would appear to be marginal.
- A substantial improvement in real incentives seems unlikely, Andropov himself having indicated that the standard of living, at best, will rise only slowly over the next several years.
- Andropov's evident reluctance to undertake major systemic changes (discussed below) is a significant barrier to substantial improvements in efficiency or accelerated technological progress.

Imbalances

In addition, many of the unfavorable developments that converged to slow industrial growth in the late 1970s will continue to do so during the rest of 1980s. Because planned investment will be inadequate to add capacities needed for planned growth in output--especially in the extractive branches where both depletion rates and investment costs will continue to rise rapidly--shortages of raw materials and a deterioration in the quality of many materials will continue. In particular, slow growth of steel production will constrain machinery output and hence investment. Spot shortages of energy of the sort

experienced in recent years will continue. Shortfalls in chemicals production also will hamper production in a variety of industries to which it provides raw materials, and slow growth of construction materials output will be a further drag on investment. Transportation also will continue to be a problem, particularly the railroads which will continue to operate under strain.

In agriculture, Andropov faces the same problems as Brezhnev in improving agricultural efficiency: bureaucratic resistance to changes in organization, weak incentives for farm workers, insufficient skills in the farm labor force to manage production and to use and maintain machinery properly, and a lack of economic infrastructure (roads, storage areas and the like) in rural areas. The greatest impediment, however, remains the failure to allow farms more freedom to make decisions at the local level about the composition of output and about planting and harvesting schedules.

In this connection, although Moscow is placing increasing emphasis on agricultural self-sufficiency, imports of 20-30 million tons of grain and 2-3 million tons of oilseeds and oilseed meal will be needed annually to support livestock expansion plans during the next several years, even with normal harvests. The Soviets are committed through long-term trade agreements with the United States, Canada, Argentina, and some smaller suppliers to purchase about 20 million tons per year through 1985.

On the other hand, we believe that the Soviet energy

situation will not seriously constrain economic growth during the 1980s. This judgment is based on our latest study of the Soviet oil industry and our resulting reassessment of Soviet energy prospects into the 1990s. The principal conclusions of these two studies are as follows:

- The combined output of oil, natural gas, and coal will increase by 10 to 12 percent in 1981-85 compared with the 17 percent planned for this period and the 22 percent achieved in 1976-80. In the latter half of the decade energy production will be about 6 percent greater than in 1981-85. Indeed, with oil output expected to be in decline by the late 1980s and coal production stagnant in terms of energy content, the increases in fuel availability during the remainder of this decade will be largely the result of rising gas output.
- The Soviet Union has thus far averted the downturn in oil production that CIA had earlier predicted by virtue of an enormous, brute-force development effort that has tapped a petroleum reserve base larger in size than we previously believed. The cost of doing this has been high, but we think that the Soviets have already allocated enough investment resources to the oil industry to permit them to come close to their production target of 12.6 million b/d by 1985.
- Because Moscow is likely to continue to increase the total amount of economic resources going to the oil industry during the 1986-90 Plan but at a slower rate, oil

production probably will plateau by the middle of this decade and then subside slowly.

- Increments in energy production will become increasingly expensive, and the USSR will find it hard to maintain oil exports--a development that will constrain hard currency earnings.
- All things considered, however, we no longer believe that major energy shortages will make a substantial difference for growth in GNP unless things go very badly in the oil sector.

Work Incentives

An integral feature of Andropov's campaign to tighten labor discipline and stimulate productivity is his strong support for linking wages and bonuses to the contribution of the individual worker and tying remuneration more directly to production results. In his public statements Andropov has harshly attacked the long-time practice of wage leveling because it conflicts with the priority the regime has assigned to raising labor productivity. But long cultural conditioning in the work force and the difficulty of reversing trends entrenched for the last 20 years will present substantial obstacles to broad use of increased wage differentials.

Serious obstacles also stand in the way of continued implementation of the discipline campaign. Public tolerance of a tough discipline drive 30 years after Stalin is likely to be tenuous and transitory. In the current labor market, moreover, management will be reluctant to crack down on workers, who can

easily quit and find jobs elsewhere, often at higher pay. Firing workers also goes against the grain of Soviet society, which guarantees a right to a job. Punitive measures against the worst offenders may help, but they cannot substitute for economic reforms to remedy fundamental problems with the incentive system.

There are also political risks in pushing the anticorruption campaign too far. Young party workers who were frustrated by the slow rate of promotions under Brezhnev may welcome a change, but the fear of a purge reportedly impelled many regional officials to oppose Andropov's succession. Any wholesale drive to purify the party could provoke further resistance.

Prospects for Relief Via Foreign Trade

In our judgment, the regime will not be able to rely substantially on increased imports to relieve resource pressures in the domestic economy during this decade. Our projections indicate that--barring another round of spiraling oil prices--Soviet hard currency purchasing power will not rise significantly through 1990. Consequently the USSR will have difficulty financing more than modest growth in hard currency imports unless it is willing to accept a sharp increase in its debt. Western credits are one--and a relatively immediate--means of financing additional hard currency imports. But Soviet debt management policy would first have to become less conservative, and Western governments would probably have to provide significantly greater encouragement and guarantees to Western banks.

Nor will the Soviets be able to go much further in reducing

net exports to Eastern Europe. Most East European countries are struggling to sustain some positive growth in GNP while putting their hard currency balances in order. The USSR and its East European allies seem unable even to agree on an agenda for a CEMA summit (proposed by Brezhnev two years ago) to discuss their mutual economic concerns. The principal issue in dispute is a Soviet push for greater economic integration, which would give CEMA, but in reality the Soviets, far-reaching authority over planning and production in individual countries. The East Europeans oppose such integration because they fear it would tie them even closer politically and economically to the USSR. The East Europeans--who want guarantees of future deliveries of Soviet energy and raw materials--also fear that Moscow would use the summit to announce additional cuts or to impose harder conditions on their energy and raw material exports to Eastern Europe.

Potential for Better Performance

The regime could improve the performance of the economy in a number of ways. Some investment resources, for instance, could be redirected to sectors where their payoff is greater than at the present time. The current investment plan is lopsided and lacks balance; it stresses development of energy and agriculture at the expense of other sectors also vital to economic growth. A greater return could probably be achieved by shifting more investment to such sectors as machinebuilding, transportation, and ferrous metals. Finally, holding down growth in defense spending would free up resources that could be used to bolster

the civilian economy.

Some gains could be achieved also by identifying those areas in the economy where mismanagement and administrative efficiency are worst and replacing the managers responsible at all levels with more competent people. Indeed, Andropov has removed a number of managers, although the shifts thus far have not been as dramatic as some Soviet officials had anticipated. Clearly there is a good deal of dead wood to be removed. Whether political obstacles and bureaucratic opposition will prevent a managerial shakeup on a broad scale is still uncertain. After a few years, however, unless the system changes to promote innovation or managerial initiative, a new generation of administrators would probably fall back into the practices of their predecessors.

The greatest potential for economic gain in the long term, however, lies in more "radical" measures that would alter Soviet economic mechanisms. While we believe that caution and conservatism characterize Andropov's approach to economic change, we cannot rule out the possibility that he might yet introduce more innovative economic programs. Andropov's freedom of action in his first year as General Secretary probably has been restricted. He is bound, to some extent at least, by an annual economic plan made before Brezhnev's death. Moreover, still lacking an independent political base and still much indebted to those who helped elevate him to power, he must move with circumspection.

Since he replaced Brezhnev, Andropov has been extremely candid in acknowledging his dissatisfaction with the performance

of the economy and has indicated on occasion that some problems may stem from built-in systemic shortcomings. In a major speech in mid-August, for instance, he underscored the necessity for changes in planning, management, and economic mechanisms before the start of the 1986-90 Plan period and expressed dissatisfaction with the pace at which the economy is improving and the lack of vigor in the search for solutions to its problems. From time to time, he has also encouraged wide-ranging public discussion and debate on what ails the Soviet economy and how to improve its organization and management.

The major constraint, however, in changing the Soviet economic system is that Andropov and the rest of the leadership--for compelling cultural, economic, and political reasons--will not dismantle the command economy and replace it with some form of market socialism. A planned economy is all Soviet leaders have ever known. They do not understand the economic rationale for markets and believe that, however efficiently markets may operate at the enterprise level, they necessarily produce chaotic results on a economy-wide scale. Planning, by contrast, is not only mandated by "Marxism-Leninism", but it is seen as being responsible for the elevation of the USSR to world superpower status. Andropov's adherence to this line of thinking is made crystal clear in his recent article in the party's ideological journal Kommunist. There he states that only change within the existing bounds of socialism will be considered.

Consequently, Andropov is likely to rely primarily on Brezhnev's legacy of programs and proposals for change worked out

between 1978 and 1982. Thus the central issue now facing the leadership is what direction to move in carrying out already approved policies, what to select from a menu of fairly well-known alternative ideas, and what commitment it is prepared--or able--to undertake in attempting to enforce its will. A case in point is the recently announced economic experiment--Andropov's only significant new program to date. When closely scrutinized it is very limited--it is confined to a few selected ministries and contains little that is new.

We are likely to see an increase in the number and variety of such reform proposals. In his mid-August speech, Andropov said that changes would be made before the start of the 1986-90 Plan but that they would be undertaken carefully and only after unhurried evaluation of large scale experiments. In addition, a high level committee under the leadership of new Central Committee Secretary Nikolay Ryzhkov was formed earlier this year to review the party's options for changing the economic system and given a year or more to report back.

Given the emphasis on study and small-scale experiments, we think that reforms of organization and management will have little impact on the economy during the next few years. Indeed, the improved performance in 1983 may even reduce the pressure for economic change in the short run.

Striking a Balance

A point stressed in our testimony last December before the Joint Economic Committee of Congress still holds. Despite its problems, the USSR is not on the verge of economic collapse. The

Soviet economy is the second largest in the world, with a large and literate population, a huge industrial plant, and an enormous endowment of natural resources. Moreover, a highly centralized, rigid system of administering the economy enables the leadership to mobilize resources to focus on key objectives. The USSR has found ways to muddle through periods of economic difficulty in the past, and it will do so again in the 1980s.

We emphasize that economic growth is likely to continue-- not at the rapid pace of this year, but at a trend rate of about 2 percent a year.

We would also note that the strains on the Soviet economy may be somewhat less than we thought a year ago.

- First, the outlook for oil production looks less unfavorable. To recapitulate, we now expect that production will hold roughly steady through the mid-1980s and then will fall only gradually through 1990.
- Second, we have revised downward our estimates of how fast defense spending has been growing, implying greater availability of resources for other uses than we had estimated earlier.
- Third, despite Andropov's basic caution and conservatism, his more energetic approach to improving the existing economic system makes Soviet economic prospects seem slightly brighter than they appeared last year.

Appendix A

Estimating Soviet Defense Expenditures

This appendix explains in some detail the methodology we use to derive the dollar and ruble estimates.

Background

Because of the uncertainties surrounding the true coverage of the announced Soviet defense budget and the clear evidence based on observable defense activity of a much higher level of ruble outlays, two principal methodologies have arisen for estimating how much the Soviets spend on defense. The first relies on deriving implicit costs from published Soviet economic statistics. The second, used only by CIA because of the large amount of data on Soviet military activities needed to apply it, is the direct-costing or building-block approach. This approach requires the identification and enumeration of physical elements of the defense effort over time and the application of direct-cost factors. Although all methodologies involve uncertainty, we find the building-block approach to be more reliable because it is based on the Intelligence Community's detailed estimates of the physical components that make up the Soviet effort.

We define "defense" differently for different purposes. Our dollar estimates cover those national security activities conducted in the US by the Department of Defense as well as the defense related programs of the Department of Energy and US coast Guard. To understand how the Soviets might view their defense effort we also use a broader definition that also includes civil

space programs, railroad and construction troops, and internal security forces. The ruble estimates are customarily presented in terms of this broader definition.

Estimates of Soviet defense costs are computed by resource category. These are defined as follows:

- Investment - the costs of replacing, modernizing, and expanding forces through the procurement of weapons and equipment, including major spare parts, and the construction of facilities.
- Operating - The costs of personnel, equipment maintenance, and logistics associated with the routine functioning of the Soviet armed forces.
- RDT&E - the costs of exploring new technology, developing new weapons systems and developing improvements to existing systems.

We calculate the ruble and dollar costs of all Soviet defense activities except RDT&E by identifying and listing Soviet forces and their support apparatus. Our model contains a description of over 1,000 distinct defense components--for example, individual classes of surface ships; ground force divisions, divided into categories on the basis of type and readiness level; and air regiments, categorized by aircraft type for each service--and our latest estimates of the order of battle, manning, equipment inventories, and new equipment purchases for each of those components.

Although we are confident in the basic trends, there are uncertainties inherent in these estimates. We are fairly

confident of our estimates of the physical quantities that go into the Soviet defense effort because once the major weapon systems have been produced and deployed, we can measure what is there. Our projection of future weapon production, however, is obviously less certain.

We are somewhat less confident in the prices we use. We have an adequate sample of ruble prices to measure Soviet costs in the base year of those prices--1970. However, over the last dozen years, Soviet prices and cost relationships have undoubtedly undergone considerable change.

The Ruble Estimate

To obtain our rubles estimates of Soviet defense spending, ruble prices are applied to the detailed estimates of physical resources. The procedure is complex but, in general, is as follows:

- Procurement - For many Soviet weapons we have an actual ruble price. For others we must derive a ruble price either by applying ruble-dollar ratios created for weapons groups or by using cost estimating relations (CERs) that make the price a function of certain performance parameters. The prices are multiplied by our estimates of the physical quantities of weapons used by the Soviet forces.
- Operating - Personnel costs are calculated by multiplying the estimates of the number of men in each military organization by ruble factors covering each type of personnel-associated outlay. Ruble maintenance costs are

derived from knowledge of Soviet operating rates.

Operating costs combine our knowledge of Soviet operating rates with rubles costs for utilities, POL, and civilian labor.

- RDT&E - RDT&E is estimated directly from official Soviet statistics. (For this reason, it is the least certain part of our estimates.)

The results, not including RDT&E, are aggregated by Soviet service, resource category, or military mission.

The Dollar Estimate

The dollar estimates begin with the same set of Soviet physical defense activities as the rubles but instead apply appropriate US dollar prices and wage rates.

- Procurement - we estimate what it would cost to build the actual Soviet weapons and equipment in the United States at prevailing dollar prices for materials and labor (including overhead and profit), using US production technology and assuming the necessary manufacturing capacity, materials, and labor would be available.
- Operating - Personnel costs are derived by estimating the military rank of the person in the United States who would be assigned the duties of each Soviet billet and then applying the appropriate US pay and allowance to that billet. O&M costs are derived by applying dollar prices to estimates of labor, materials, spare parts, overhead, and utilities required to operate and maintain equipment the way the Soviets do.

-- RDT&E - To estimate the dollar cost of performing Soviet RDT&E activities in the US, the aggregate ruble figure is converted into dollars.

Once again, the results, not including RDT&E, can be aggregated by service, mission, or resource category.

JEC Briefing Paper
Appendix B
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Table 1

USSR: GNP by Sector of Origin at Factor Cost
(billion 1970 Rubles)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
GNP*	383.3	459.8	481.8	497.4	514.2	516.1	524.7	536.1	547.0
Industry		122.6	163.6	170.1	177.0	182.8	186.6	191.8	196.6
Agriculture		81.0	72.0	80.2	83.0	86.0	78.5	74.0	73.7
Construction		28.0	36.8	38.0	38.9	40.1	40.4	41.3	42.2
Transportation		33.4	45.8	47.8	48.8	51.1	52.3	54.3	56.4
Communications		3.3	4.7	5.0	5.3	5.6	5.9	6.2	6.5
Trade	28.0	35.0	36.3	37.6	38.8	39.6	40.8	41.8	42.1
Services		78.5	92.7	95.0	97.3	100.3	103.2	106.6	109.2
Other (including military personnel)		8.4	9.3	9.4	9.5	9.6	9.6	9.7	9.8

* Components may not add exactly to total because of rounding.

Table 2

USSR: GNP by End Use at Factor Cost
(billion 1970 Rubles)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
GNP*	383.3	459.8	481.8	497.4	514.2	516.1	524.7	536.1	547.0
Consumption		207.8	247.3	252.8	260.1	267.8	275.1	283.7	289.5
goods		133.1	158.6	161.4	166.7	171.2	175.8	181.5	184.9
services		74.6	88.7	91.4	93.4	96.6	99.4	102.2	104.6
Investment		108.2	140.6	151.8	159.5	165.5	168.0	172.2	178.5
Other	67.3	72.0	77.2	77.8	80.9	73.0	68.8	68.1	72.2

* Components may not add exactly to total because of rounding.

Table 3

USSR: Value Added in Industry at Factor Cost
(billion 1970 rubles)

<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	
Industry*	122.6	163.6	170.1	177.0	182.8	186.6	191.8	196.6	201.0
Ferrous metals	8.8	10.7	11.0	11.0	11.3	11.3	11.2	11.2	11.1
Nonferrous metals	4.8	6.4	6.6	6.8	6.9	7.1	7.2	7.3	7.3
Fuel	12.1	15.4	16.0	16.7	17.2	17.7	18.0	18.3	18.7
Electric power	8.3	11.7	12.5	12.9	13.5	13.9	14.6	14.9	15.4
Machinebuilding & metalworking	38.5	56.6	59.9	63.3	66.5	69.3	72.2	74.6	77.5
Chemicals	7.6	11.7	12.3	12.9	13.4	13.4	14.0	14.5	14.8
Wood, pulp, and paper	9.4	10.7	10.7	10.7	10.7	10.3	10.5	10.8	10.9
Construction materials	8.0	10.4	10.8	11.1	11.5	11.0	11.0	11.2	11.0
Light industry	9.8	11.2	11.6	11.9	12.2	12.4	12.7	13.0	13.0
Food industry	11.6	14.1	13.9	14.5	14.3	14.8	14.9	15.2	15.6
Other industry	3.6	4.8	4.9	5.1	5.3	5.4	5.6	5.7	5.8

* Components may not add exactly to total because of rounding.

Table 4

United States and USSR: Production of Selected
Commodities in Selected Years

<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	
Primary energy (million b/d oe)						
US 29.5	28.6	28.9	30.5	30.4	30.1	
USSR	18.3	23.2	26.6	28.2	29.0	29.8**
Oil*						
(million b/d)						
US 11.3	10.0	10.3	10.2	10.2	10.3	
USSR	7.1	9.8	11.4	12.0	12.2	12.3
Natural Gas (Dry)						
(trillion cubic feet)						
US 21.0	19.2	19.1	19.6	19.4	17.8	
USSR	7.0	10.2	13.1	15.4	16.4	17.7
Coal						
(million metric tons)						
US 555.8	593.9	608.0	752.7	747.3	756.1	
USSR	624.1	701.3	723.6	716.4	704.0	718.0
Electricity (gross)						
(billion kilowatt-hours)						
US**	1,743	2,131	2,436	2,438	2,448	2,387
USSR	741	1,039	1,202	1,294	1,326	1,366
Iron ore (million metric tons)						
US 91.2	80.1	82.9	70.7	75.5	37.0	
USSR	197.1	234.7	246.2	245.0	242.0	244.0
Bauxite (thousand metric tons)						
US 2,125	1,800	1,669	1,559	1,510	700	
USSR	6,700	8,000	8,800	9,100	9,100	9,000
Pig iron (million metric tons)						
US 83.0	72.5	79.6	62.3	67.3	39.1	
USSR	85.9	103.0	110.7	107.0	108.0	107
Crude steel (million metric tons)						
US 119.3	105.8	124.3	101.5	108.8	65.7	
USSR	115.9	141.3	151.5	148.0	149.0	147.0

* Including natural gas liquids.

** Estimated.

Table 4 (cont.)

<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	
Refined copper (thousand metric tons)						
US 2,074	1,632	1,869	1,726	2,026	1684.0	
USSR	1,015	1,320	1,460	1,520	1,530	1510.0
Primary aluminum (thousand metric tons)						
US 3,607	3,519	4,358	4,654	4,489	3,274	
USSR	1,490	2,130	2,330	2,460	2,475	2,490
Lead (thousand metric tons)						
US 605	577	565	550	500	515	
USSR	470	540	580	600	600	560
Refined zinc (thousand metric tons)						
US 866	450	441	370	345	298	
USSR	690	820	875	900	900	820
Gold (million troy ounces)						
US 1.7	1.0	1.0	1.0	1.3	1.4	
USSR	7.0	8.3	9.5	10.2	10.4	10.6
Synthetic ammonia (million metric tons of N)						
US 10.3	12.2	12.8	14.7	14.2	11.5	
USSR	6.3	9.9	11.5	13.8	14.6	15.4
Mineral fertilizer (million metric tons, nutrient content)						
US 14.8	17.1	19.0	22.5	23.2	19.2	
USSR	13.1	22.0	23.7	24.8	26.0	26.7
Nitrogen fertilizer (million metric tons of N)						
US 7.6	8.5	9.5	11.2	11.8	10.5	
USSR	5.4	8.5	9.3	10.2	10.9	11.2
Plastics (million metric tons)						
US 9.7	10.2	12.4	12.8	13.1	12.4	
USSR	1.7	1.8	3.5	3.6	4.1	4.1
Synthetic rubber (million metric tons)						
US 2.2	2.0	2.7	2.2	2.2	1.8	
USSR	0.9	1.4	1.8	1.9	1.9	1.8
Woven cotton fabrics						
US (billion linear meters)	5.7	3.7	3.7	3.4	3.6	3.0
USSR (billion square meters)	6.2	6.6	7.0	7.1	7.2	7.1

Table 4 (cont.)

<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	
Tractors (thousands)						
US 191.7	232.0	197.3	155.4	151.0	97.4	
USSR	458.5	550.4	576.1	555.0	559.0	555.0
Automobiles (millions)						
US 6.5	6.7	9.2	6.4	6.2	5.0	
USSR	0.3	1.2	1.3	1.3	1.3	1.3
Trucks and buses (millions)						
US 1.7	2.3	3.7	1.7	1.7	1.9	
USSR	0.6	0.8	0.8	0.9	0.9	0.9
Cement (million metric tons)						
US 67.4	61.8	76.2	69.8	66.1	57.5	
USSR	95.2	122.1	127.0	125.0	127.0	124.0
Grain (million metric tons)						
US 186.7	249.2	276.5	269.7	333.4	339.0	
USSR	186.8	140.1	237.4	189.1	158	180 ^a
Wheat (million metric tons)						
US 36.8	57.9	48.3	64.5	76.0	76.4	
USSR	99.7	66.2	120.8	98.2	81.0	86 ^a
Coarse grain (million metric tons)						
US 146.1	185.5	222.1	198.6	248.9	255.5	
USSR ^b	85.8	71.9	114.5	88.3	75.0	83.6
Potatoes (million metric tons)						
US 14.8	14.6	16.6	13.6	13.9	15.6	
USSR	96.8	88.7	86.1	67.0	72.0	78.0
Sugar (million metric tons)						
US 5.3	6.0	5.1	5.3	5.6	5.4	
USSR	11.1	11.3	13.3	11.0	10.3	13.2
Meat (million metric tons)						
US 22.5	23.0	25.0	24.3	24.5	23.8	
USSR	12.3	15.0	15.5	15.0	15.2	15.2
Milk (million metric tons)						
US 53.3	52.3	55.1	58.3	60.2	61.6	
USSR	83.0	90.8	94.7	90.9	88.5	90.1
Ginned cotton (thousand metric tons)						
US 2,219	1,808	2,364	2,422	3,426	2,602	
USSR	2,343	2,674	2,669	2,858	2,947	2,738

^a USDA estimate
^b Excluding rice

Table 5

USSR: Selected Indicators of Agricultural Output

<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	
Value of output ^a (billion rubles)	83.6	82.0	88.6	92.8	95.8	89.8	86.9	87.2	90.0
Commodity Production (million metric tons)									
Grain ^b	186.8	140.1	223.8	195.7	237.4	179.3	189.1	158.0 ^c	180.0 ^d
Potatoes	96.8	88.7	85.1	83.7	86.1	91.0	67.0	72.1	78.0
Sugar beets	78.9	66.3	99.9	93.1	93.5	76.2	81.0	60.8	71.3
Sunflower seed	6.14	4.99	5.28	5.90	5.33	5.41	4.62	4.68	5.30
Cotton	6.89	7.86	8.28	8.76	8.50	9.16	9.96	9.64	9.28
Vegetables	21.2	23.4	25.0	24.1	27.9	27.2	27.3	27.1	29.2
Meat 12.3	15.0	13.6	14.7	15.5	15.3	15.1	15.2	15.2	
Milk 83.0	90.8	89.7	94.9	94.7	93.2	90.9	88.9	90.1	
Wool .419	.467	.435	.459	.467	.478	.461	.460	.460	
Eggs (billions)	40.7	57.4	56.2	61.2	64.5	65.8	67.9	70.9	72.1

^a Net of feed, seed, and waste in constant 1970 prices.

^b Bunker weight. To be comparable to Western measures, an average reduction of 11 percent is required.

^c Unofficially reported.

^d USDA estimate

Table 6

USSR: Freight Turnover by Transport Mode
(billions of ton/kilometers)

Year	Total All Modes	Railroads	Roads	Inland Waterways	Maritime	Pipelines (Oil & Oil Products)	Air
1970	3829.2	2494.7	220.8	174.0	656.1	281.7	1.88
1975	5200.9	3236.5	337.9	221.7	736.3	665.9	2.59
1976	5432.7	3295.4	355.1	222.7	762.2	794.6	2.71
1977	5632.7	3330.9	373.3	230.7	772.6	922.4	2.80
1978	5948.7	3429.4	396.0	243.7	827.6	1049.1	2.86
1979	5986.3	3349.3	409.6	232.7	851.1	1140.7	2.91
1980	6184.2	3439.9	432.1	244.9	848.2	1216.0	3.09
1981	6337.4	3503.2	458.9	255.6	853.4	1263.2	3.08
1982	6328.4	3464.2	464.0	262.5	827.9	1306.8	3.03

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Table 7
USSR: Estimated Hard Currency Balance of Payments

	(Million current US dollars)								
	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Current account balance	260	-4,607	-3,216	462	422	2,178	1,904	-100	4,508
Trade balance	-560	-6,297	-5,253	-2,942	-3,690	-2,018	-2,486	-4,000	-992
Exports, f.o.b.	2,421	8,280	10,225	11,863	13,336	19,417	23,584	23,778	26,552
Imports, f.o.b.	2,161	14,577	13,478	14,805	17,026	21,435	26,070	27,778	27,544

Table 8

USSR: Estimated Hard Currency Debt to the West

(Million US dollars, yearend)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982^a</u>
Gross debt	10,577	14,707	15,609	16,373	18,047	17,861	20,900	20,100
Commercial debt	6,947	9,662	9,858	9,513	10,479	10,013	13,000	11,500
Government and government-backed debt	3,630	5,045	5,751	6,860	7,568	7,848	7,900	8,600
Assets in Western banks	3,127	4,738	4,428	5,980	8,806	8,572	8,430	10,000
Net debt	7,450	9,969	11,181	10,393	9,241	9,289	12,470	10,100

^a Provisional estimate.

Table 9

USSR: Foreign Trade by Major Region

	(million current rubles)								
	1970	1975	1976	1977	1978	1979	1980	1981	1982
Total Exports	11,520	24,034	28,022	33,255	35,668	42,426	49,635	57,108	63,165
Communist Countries	7,530	14,584	16,448	19,101	21,254	23,628	26,903	31,192	34,136
Developed West	2,154	6,140	7,834	8,817	8,699	12,506	15,862	17,247	18,849
Less Developed Countries ^a	1,836	3,310	3,740	5,337	5,715	6,292	6,870	8,669	10,180
Total Imports	10,559	26,671	28,731	30,092	34,556	37,864	44,463	52,631	56,411
Communist Countries	6,873	13,968	15,104	17,171	20,744	21,427	23,650	26,742	30,816
Developed West	2,540	9,704	10,822	9,924	10,981	13,248	15,721	18,112	18,892
Less Developed Countries	1,146	2,999	2,805	2,997	2,831	3,189	5,092	7,777	6,703

^a Including exports of military goods, which rose from an estimated 944 million rubles in 1970 to 5,352 million rubles in 1981 and 6,600 million rubles in 1982.

Table 10

USSR: Average Annual Growth of Per-Capita Consumption

(1970 established prices)

	Percent								
	<u>1966-70</u>	<u>1971-75</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982^a</u>
Total consumption	5.1	2.8	1.8	2.3	2.4	2.4	3.0	1.1	-0.7
Food	4.3	1.6	0	1.3	2.0	1.5	2.1	-0.5	-1.0
Soft goods	7.1	3.0	3.6	2.7	2.0	3.5	3.7	1.9	-0.6
Durables	9.1	10.0	5.6	8.0	3.3	3.6	6.7	5.3	-3.5
Services	5.8	4.6	3.8	1.7	3.8	3.8	3.8	2.6	2.1
Housing	2.1	1.7	1.4	1.4	1.4	1.3	1.2	0.8	1.2
Utilities	5.4	5.3	5.1	3.0	3.8	3.3	3.7	2.3	2.9
Transportation	8.0	6.1	5.0	-1.3	3.0	3.6	3.0	2.5	1.2
Communications	7.8	6.3	5.5	4.7	4.5	4.9	4.7	3.7	2.3
Repair and Personal care	8.4	5.7	5.0	4.1	6.2	6.1	6.1	4.4	3.5
Recreation	1.6	0.6	-2.5	-0.4	1.7	0.9	1.9	-0.4	-0.3
Health	3.2	1.4	0.9	0.8	2.9	0.7	0.1	-0.7	0.3
Education	5.8	1.4	1.6	1.2	2.2	1.2	1.7	0	0.1

^a Preliminary.

Table 11
United States and USSR: Production of Selected Consumer Goods

	1970	1975	1976	1977	1978	1979	1980	1981	1982
Food									
Grain ^a (kilograms per capita)									
US ^b	910	1,154	1,197	1,208	1,242	1,345	1,184	1,450	1,461
USSR ^c	769	551	872	756	908	681	712	590	667
Meat ^d (kilograms per capita)									
US	110	106	117	114	112	104	107	107	103
USSR	51	59	53	57	59	58	57	57	56
Transportation									
Passenger automobile production ^e (units per hundred persons)									
US	3.19	3.11	3.95	4.18	4.12	3.74	2.81	2.71	2.18
USSR	0.14	0.47	0.48	0.49	0.50	0.50	0.50	0.49	0.48
Household equipment									
Washing machine production ^e (units per thousand persons)									
US	20	20	21	23	23	22	20	19	17
USSR	22	13	14	14	14	14	14	15	15
Washing machines in use ^f (units per thousand persons)									
US ^g	194	238	248	256	263	273	280	287	291
USSR	141	189	195	200	203	205	205	205	205
Refrigerator production (units per thousand persons)									
US ^e	26	21	22	26	26	25	23	21	19
USSR	17	22	23	22	23	23	22	22	22
Refrigerators in use ^f (units per thousand persons)									
US ^g	336	340	344	349	349	352	352	352	349
USSR	89	178	194	210	225	240	252	262	268

^a The data do not necessarily represent food available for consumption, because imports of foreign grain and exports of domestically produced grain are not included.

^b Excluding corn silage and forage but including sorghum for grain.

^c Including miscellaneous grains and pulses. Measured in bunker weight, i.e., gross output from the combine which includes excess moisture, unripe and damaged kernels, weed seeds, and other trash. For comparison with US or other country grain output, an average discount of 11 percent should be applied.

^d Data are on a slaughter weight, bone-in basis.

^e Data are for factory sales and include complete units exported for assembly.

^f As of the end of the year.

^g Data are understated because they are based on the number of households with one or more units; thus, a household with more than one is counted as having only one.

Table 12

USSR: Average Annual Employment by Sector
(thousands)

Sector of the Economy	1970	1975	1980	1981	1982
Total	103,774	113,942	121,990	122,988	123,932
Industry	31,593	34,054	36,891	37,236	37,550
Construction	9,052	10,574	11,240	11,298	11,321
Socialized agriculture	23,440	22,756	21,600	21,300	21,141
Transport and communications	9,315	10,743	11,958	12,172	12,375
Trade, public dining, sales & material technical supply, procurement	7,537	8,857	9,694	9,828	9,880
Health, education, social security, cultural arts, science & scientific services	16,561	19,196	21,515	21,909	22,275
Government administration, credit & insurance organizations	2,226	2,707	3,144	3,218	3,265
Other (housing, personnel services, etc.)	4,050	5,055	5,948	6,027	6,125

Table 13

USSR: Gross Fixed Capital Investment*

(Billion rubles, 1973 prices)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total investment**	80.7	112.9	118.0	122.3	129.7	130.7	133.7	138.8	141.7
of which									
State	69.2	98.0	103.0	106.9	113.9	114.6	117.7	122.7	125.4
Collective farms	7.6	10.7	11.0	11.3	11.6	11.8	11.9	11.9	12.0
Cooperative enterprises and organizations	2.2	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.7
Private housing and apartments	1.6	1.8	1.7	1.7	1.7	1.7	1.6	1.7	1.6
Industry	28.5	39.7	41.6	43.5	45.6	45.7	47.6	49.9	NA
Agriculture	14.3	23.3	24.3	24.9	25.8	26.3	26.9	27.5	NA
Transport and communications	8.0	12.7	13.3	13.9	16.3	16.2	16.1	16.8	NA
Construction	3.0	4.3	5.0	4.7	5.2	5.3	5.4	5.8	NA
Other	26.9	32.9	33.8	35.3	36.8	37.2	37.7	38.8	NA

* Source: DDI Reference Aid, SOV 82-10093 (Unclassified), August 1982, Soviet Statistics on Capital Formation and N.kh. SSSR, 1922-1982.

** Components may not add exactly because of rounding.

Table 14

USSR: Growth of GNP and Factor Productivity
(average annual percentage change)

	<u>1966-70^a</u>	<u>1971-75^a</u>	<u>1976-80^a</u>	<u>1981</u>	<u>1982</u>
Gross national product ^b	5.3	3.7	2.7	2.2	2.0
Combined inputs ^c	4.1	4.2	3.6	3.2	3.1
Manhours	2.0	1.7	1.3	1.0	1.1
Capital	7.4	8.0	6.9	6.7	6.1
Land	-0.3	0.8	Neg.	Neg.	Neg.
Total factor productivity	1.1	-0.5	-0.8	-1.0	-1.0
Manhour productivity	3.2	2.0	1.3	1.2	0.9
Capital productivity	-2.0	-4.0	-4.0	-4.2	-3.8

^a For computing average annual rates of growth, the base year is the year prior to the stated period

^b Based on indexes of GNP (1970 rubles), by sector of origin, at factor cost.

^c Inputs of manhours, capital, and land are combined using weights of 55.8 percent, 41.2 percent, 3.0 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, other income, and social insurance deductions), capital costs (depreciation and a calculated capital charge), and land rent in 1970, the base year for all indexes underlying the growth rate calculations.

Table 15

USSR: Growth of Industrial Output and Factor Productivity
(average annual percentage change)

	<u>1966-70^a</u>	<u>1971-75^a</u>	<u>1976-80^a</u>	<u>1981</u>	<u>1982</u>
Industrial production	6.3	5.9	3.2	2.5	2.2
Combined inputs ^b	5.7	4.9	4.5	4.1	3.6
Manhours	3.1	1.5	1.6	0.9	0.7
Capital	8.8	8.7	7.7	7.8	6.9
Total factor productivity	0.5	1.0	-1.2	-1.6	-1.3
Manhour productivity	3.1	4.4	1.6	1.6	1.5
Capital productivity	-2.3	-2.6	-4.2	-4.9	-4.3

^a For computing the average annual rates of growth, the base year is the year prior to the stated period.

^b Inputs of manhours and capital are combined using weights of 52.4 percent and 47.6 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages and social insurance deductions) and capital costs (depreciation and a capital charge) in 1970, the base year for all indexes underlying the growth rate calculations.

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Table 1

USSR: GNP by Sector of Origin at Factor Cost
(billion 1970 Rubles)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
GNP*	383.3	459.8	481.8	497.4	514.2	516.1	524.7	536.1	547.0
Industry	122.6	163.6	170.1	177.0	182.8	186.6	191.8	196.6	201.0
Agriculture	81.0	72.0	80.2	83.0	86.0	78.5	74.0	73.7	76.0
Construction	28.0	36.8	38.0	38.9	40.1	40.4	41.3	42.2	42.5
Transportation	33.4	45.8	47.8	48.8	51.1	52.3	54.3	56.4	57.1
Communications	3.3	4.7	5.0	5.3	5.6	5.9	6.2	6.5	6.7
Trade	28.0	35.0	36.3	37.6	38.8	39.6	40.8	41.8	42.1
Services	78.5	92.7	95.0	97.3	100.3	103.2	106.6	109.2	111.6
Other (including military personnel)	8.4	9.3	9.4	9.5	9.6	9.6	9.7	9.8	10.1

* Components may not add exactly to total because of rounding.

Table 2

USSR: GNP by End Use at Factor Cost
(billion 1970 Rubles)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
GNP*	383.3	459.8	481.8	497.4	514.2	516.1	524.7	536.1	547.0
Consumption	207.8	247.3	252.8	260.1	267.8	275.1	283.7	289.5	291.7
goods	133.1	158.6	161.4	166.7	171.2	175.8	181.5	184.9	185.0
services	74.6	88.7	91.4	93.4	96.6	99.4	102.2	104.6	106.7
Investment	108.2	140.6	151.8	159.5	165.5	168.0	172.2	178.5	183.2
Other	67.3	72.0	77.2	77.8	80.9	73.0	68.8	68.1	72.2

* Components may not add exactly to total because of rounding.

Table 3

USSR: Value Added in Industry at Factor Cost
(billion 1970 rubles)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Industry*	122.6	163.6	170.1	177.0	182.8	186.6	191.8	196.6	201.0
Ferrous metals	8.8	10.7	11.0	11.0	11.3	11.3	11.2	11.2	11.1
Nonferrous metals	4.8	6.4	6.6	6.8	6.9	7.1	7.2	7.3	7.3
Fuel	12.1	15.4	16.0	16.7	17.2	17.7	18.0	18.3	18.7
Electric power	8.3	11.7	12.5	12.9	13.5	13.9	14.6	14.9	15.4
Machinebuilding & metalworking	38.5	56.6	59.9	63.3	66.5	69.3	72.2	74.6	77.5
Chemicals	7.6	11.7	12.3	12.9	13.4	13.4	14.0	14.5	14.8
Wood, pulp, and paper	9.4	10.7	10.7	10.7	10.7	10.3	10.5	10.8	10.9
Construction materials	8.0	10.4	10.8	11.1	11.5	11.0	11.0	11.2	11.0
Light industry	9.8	11.2	11.6	11.9	12.2	12.4	12.7	13.0	13.0
Food industry	11.6	14.1	13.9	14.5	14.3	14.8	14.9	15.2	15.6
Other industry	3.6	4.8	4.9	5.1	5.3	5.4	5.6	5.7	5.8

* Components may not add exactly to total because of rounding.

Table 4

United States and USSR: Production of Selected
Commodities in Selected Years

	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Primary energy (million b/d oe)						
US	29.5	28.6	28.9	30.5	30.4	30.1
USSR	18.3	23.2	26.6	28.2	29.0	29.8**
Oil*						
(million b/d)						
US	11.3	10.0	10.3	10.2	10.2	10.3
USSR	7.1	9.8	11.4	12.0	12.2	12.3
Natural Gas (Dry)						
(trillion cubic feet)						
US	21.0	19.2	19.1	19.6	19.4	17.8
USSR	7.0	10.2	13.1	15.4	16.4	17.7
Coal						
(million metric tons)						
US	555.8	593.9	608.0	752.7	747.3	756.1
USSR	624.1	701.3	723.6	716.4	704.0	718.0
Electricity (gross)						
(billion kilowatt-hours)						
US**	1,743	2,131	2,436	2,438	2,448	2,387
USSR	741	1,039	1,202	1,294	1,326	1,366
Iron ore (million metric tons)						
US	91.2	80.1	82.9	70.7	75.5	37.0
USSR	197.1	234.7	246.2	245.0	242.0	244.0
Bauxite (thousand metric tons)						
US	2,125	1,800	1,669	1,559	1,510	700
USSR	6,700	8,000	8,800	9,100	9,100	9,000
Pig iron (million metric tons)						
US	83.0	72.5	79.6	62.3	67.3	39.1
USSR	85.9	103.0	110.7	107.0	108.0	107
Crude steel (million metric tons)						
US	119.3	105.8	124.3	101.5	108.8	65.7
USSR	115.9	141.3	151.5	148.0	149.0	147.0

* Including natural gas liquids.

** Estimated.

Table 4 (cont.)

	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Refined copper (thousand metric tons)						
US	2,074	1,632	1,869	1,726	2,026	1684.0
USSR	1,015	1,320	1,460	1,520	1,530	1510.0
Primary aluminum (thousand metric tons)						
US	3,607	3,519	4,358	4,654	4,489	3,274
USSR	1,490	2,130	2,330	2,460	2,475	2,490
Lead (thousand metric tons)						
US	605	577	565	550	500	515
USSR	470	540	580	600	600	560
Refined zinc (thousand metric tons)						
US	866	450	441	370	345	298
USSR	690	820	875	900	900	820
Gold (million troy ounces)						
US	1.7	1.0	1.0	1.0	1.3	1.4
USSR	7.0	8.3	9.5	10.2	10.4	10.6
Synthetic ammonia (million metric tons of N)						
US	10.3	12.2	12.8	14.7	14.2	11.5
USSR	6.3	9.9	11.5	13.8	14.6	15.4
Mineral fertilizer (million metric tons, nutrient content)						
US	14.8	17.1	19.0	22.5	23.2	19.2
USSR	13.1	22.0	23.7	24.8	26.0	26.7
Nitrogen fertilizer (million metric tons of N)						
US	7.6	8.5	9.5	11.2	11.8	10.5
USSR	5.4	8.5	9.3	10.2	10.9	11.2
Plastics (million metric tons)						
US	9.7	10.2	12.4	12.8	13.1	12.4
USSR	1.7	1.8	3.5	3.6	4.1	4.1
Synthetic rubber (million metric tons)						
US	2.2	2.0	2.7	2.2	2.2	1.8
USSR	0.9	1.4	1.8	1.9	1.9	1.8
Woven cotton fabrics						
US (billion linear meters)	5.7	3.7	3.7	3.4	3.6	3.0
USSR (billion square meters)	6.2	6.6	7.0	7.1	7.2	7.1

Table 4 (cont.)

	<u>1970</u>	<u>1975</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Tractors (thousands)						
US	191.7	232.0	197.3	155.4	151.0	97.4
USSR	458.5	550.4	576.1	555.0	559.0	555.0
Automobiles (millions)						
US	6.5	6.7	9.2	6.4	6.2	5.0
USSR	0.3	1.2	1.3	1.3	1.3	1.3
Trucks and buses (millions)						
US	1.7	2.3	3.7	1.7	1.7	1.9
USSR	0.6	0.8	0.8	0.9	0.9	0.9
Cement (million metric tons)						
US	67.4	61.8	76.2	69.8	66.1	57.5
USSR	95.2	122.1	127.0	125.0	127.0	124.0
Grain (million metric tons)						
US	186.7	249.2	276.5	269.7	333.4	339.0
USSR	186.8	140.1	237.4	189.1	158	180 ^a
Wheat (million metric tons)						
US	36.8	57.9	48.3	64.5	76.0	76.4
USSR	99.7	66.2	120.8	98.2	81.0	86 ^a
Coarse grain (million metric tons)						
US	146.1	185.5	222.1	198.6	248.9	255.5
USSR ^b	85.8	71.9	114.5	88.3	75.0	83.6
Potatoes (million metric tons)						
US	14.8	14.6	16.6	13.6	13.9	15.6
USSR	96.8	88.7	86.1	67.0	72.0	78.0
Sugar (million metric tons)						
US	5.3	6.0	5.1	5.3	5.6	5.4
USSR	11.1	11.3	13.3	11.0	10.3	13.2
Meat (million metric tons)						
US	22.5	23.0	25.0	24.3	24.5	23.8
USSR	12.3	15.0	15.5	15.0	15.2	15.2
Milk (million metric tons)						
US	53.3	52.3	55.1	58.3	60.2	61.6
USSR	83.0	90.8	94.7	90.9	88.5	90.1
Ginned cotton (thousand metric tons)						
US	2,219	1,808	2,364	2,422	3,426	2,602
USSR	2,343	2,674	2,669	2,858	2,947	2,738

^a USDA estimate
^b Excluding rice

Table 5

USSR: Selected Indicators of Agricultural Output

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Value of output ^a (billion rubles)	83.6	82.0	88.6	92.8	95.8	89.8	86.9	87.2	90.0
Commodity Production (million metric tons)									
Grain ^b	186.8	140.1	223.8	195.7	237.4	179.3	189.1	158.0 ^c	180.0 ^d
Potatoes	96.8	88.7	85.1	83.7	86.1	91.0	67.0	72.1	78.0
Sugar beets	78.9	66.3	99.9	93.1	93.5	76.2	81.0	60.8	71.3
Sunflower seed	6.14	4.99	5.28	5.90	5.33	5.41	4.62	4.68	5.30
Cotton	6.89	7.86	8.28	8.76	8.50	9.16	9.96	9.64	9.28
Vegetables	21.2	23.4	25.0	24.1	27.9	27.2	27.3	27.1	29.2
Meat	12.3	15.0	13.6	14.7	15.5	15.3	15.1	15.2	15.2
Milk	83.0	90.8	89.7	94.9	94.7	93.2	90.9	88.9	90.1
Wool	.419	.467	.435	.459	.467	.478	.461	.460	.460
Eggs (billions)	40.7	57.4	56.2	61.2	64.5	65.8	67.9	70.9	72.1

^a Net of feed, seed, and waste in constant 1970 prices.

^b Bunker weight. To be comparable to Western measures, an average reduction of 11 percent is required.

^c Unofficially reported.

^d USDA estimate

Table 6

USSR: Freight Turnover by Transport Mode
(billions of ton/kilometers)

<u>Year</u>	<u>Total All Modes</u>	<u>Railroads</u>	<u>Roads</u>	<u>Inland Waterways</u>	<u>Maritime</u>	<u>Pipelines (Oil & Oil Products)</u>	<u>Air</u>
1970	3829.2	2494.7	220.8	174.0	656.1	281.7	1.88
1975	5200.9	3236.5	337.9	221.7	736.3	665.9	2.59
1976	5432.7	3295.4	355.1	222.7	762.2	794.6	2.71
1977	5632.7	3330.9	373.3	230.7	772.6	922.4	2.80
1978	5948.7	3429.4	396.0	243.7	827.6	1049.1	2.86
1979	5986.3	3349.3	409.6	232.7	851.1	1140.7	2.91
1980	6184.2	3439.9	432.1	244.9	848.2	1216.0	3.09
1981	6337.4	3503.2	458.9	255.6	853.4	1263.2	3.08
1982	6328.4	3464.2	464.0	262.5	827.9	1306.8	3.03

Table 7
USSR: Estimated Hard Currency Balance of Payments

	(Million current US dollars)								
	1970	1975	1976	1977	1978	1979	1980	1981	1982
Current account balance	260	-4,607	-3,216	462	422	2,178	1,904	-100	4,508
Trade balance	-560	-6,297	-5,253	-2,942	-3,690	-2,018	-2,486	-4,000	-992
Exports, f.o.b.	2,424	8,280	10,225	11,863	13,336	19,417	23,584	23,778	26,552
Imports, f.o.b.	2,984	14,577	15,478	14,805	17,026	21,435	26,070	27,778	27,544
Additional military deliveries to LDCs, f.o.b. ^a	400	1,500	1,850	3,220	3,965	3,855	4,200	4,200	5,900
Net interest	-80	-570	-724	-848	-881	-799	-710	-1,300	-1,500
Other invisibles and transfers	500	760	911	1,032	1,028	1,140	900	1,000	1,100
Capital account balance	Negl.	6,522	3,888	2,830	1,734	338	1,628	5,940	-1,270
Gross drawings ^b	NA	6,371	5,495	2,857	3,096	4,474	2,865	6,300	2,600
Government backed	450	1,972	2,450	1,991	2,565	2,410	2,195	2,100	2,800
Commercial	NA	4,399	3,045	866	531	2,064	670	4,200	-200
Repayments	NA	969	1,365	1,955	2,332	2,800	3,051	3,200	3,400
Government backed	160	730	1,035	1,285	1,456	1,702	1,915	2,000	2,100
Commercial	NA	239	330	670	876	1,098	1,136	1,200	1,300
Net change in assets held in Western banks	NA	-395	1,611	-310	1,552	2,826	-234	-140	1,570
Gold sales	Negl.	725	1,369	1,618	2,522	1,490	1,580	2,700	1,100
Net errors and omissions ^c	NA	-1,915	-672	-3,292	-2,156	-2,516	-3,532	-5,840	-3,238

^a These estimates exclude the value of arms-related commercial exports included in the reporting on Soviet exports to individual LDCs, which we estimate at about \$2 billion in 1981. They are based on the reported export residuals in published Soviet data on trade with LDCs (i.e., the difference between Soviet reported aggregate exports to the LDCs and Soviet reporting on exports to individual LDCs). The export residuals were reduced by the estimated value of Soviet exports of major arms systems to non-hard currency paying LDCs on a f.o.b. basis. The estimates also excludes the value of follow-on services, which may be substantial.

^b Including additions to short-term debt.

^c Reflects hard currency assistance to other Communist countries; hard currency trade with other Communist countries; hard currency credits to LDCs to finance Soviet sales of machinery and equipment (including military equipment); and credits to developed Western countries to finance sales of oil and other commodities, as well as errors in other line items of the accounts.

Table 8

USSR: Estimated Hard Currency Debt to the West

(Million US dollars, yearend)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982^a</u>
Gross debt	10,577	14,707	15,609	16,373	18,047	17,861	20,900	20,100
Commercial debt	6,947	9,662	9,858	9,513	10,479	10,013	13,000	11,500
Government and government-backed debt	3,630	5,045	5,751	6,860	7,568	7,848	7,900	8,600
Assets in Western banks	3,127	4,738	4,428	5,980	8,806	8,572	8,430	10,000
Net debt	7,450	9,969	11,181	10,393	9,241	9,289	12,470	10,100

^a Provisional estimate.

Table 9

USSR: Foreign Trade by Major Region

	(million current rubles)								
	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total Exports	11,520	24,034	28,022	33,255	35,668	42,426	49,635	57,108	63,165
Communist Countries	7,530	14,584	16,448	19,101	21,254	23,628	26,903	31,192	34,136
Developed West	2,154	6,140	7,834	8,817	8,699	12,506	15,862	17,247	18,849
Less Developed Countries ^a	1,836	3,310	3,740	5,337	5,715	6,292	6,870	8,669	10,180
Total Imports	10,559	26,671	28,731	30,092	34,556	37,864	44,463	52,631	56,411
Communist Countries	6,873	13,968	15,104	17,171	20,744	21,427	23,650	26,742	30,816
Developed West	2,540	9,704	10,822	9,924	10,981	13,248	15,721	18,112	18,892
Less Developed Countries	1,146	2,999	2,805	2,997	2,831	3,189	5,092	7,777	6,703

^a Including exports of military goods, which rose from an estimated 944 million rubles in 1970 to 5,352 million rubles in 1981 and 6,600 million rubles in 1982.

Table 10

USSR: Average Annual Growth of Per-Capita Consumption

(1970 established prices)

	Percent								
	<u>1966-70</u>	<u>1971-75</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982^a</u>
Total consumption	5.1	2.8	1.8	2.3	2.4	2.4	3.0	1.1	-0.7
Food	4.3	1.6	0	1.3	2.0	1.5	2.1	-0.5	-1.0
Soft goods	7.1	3.0	3.6	2.7	2.0	3.5	3.7	1.9	-0.6
Durables	9.1	10.0	5.6	8.0	3.3	3.6	6.7	5.3	-3.5
Services	5.8	4.6	3.8	1.7	3.8	3.8	3.8	2.6	2.1
Housing	2.1	1.7	1.4	1.4	1.4	1.3	1.2	0.8	1.2
Utilities	5.4	5.3	5.1	3.0	3.8	3.3	3.7	2.3	2.9
Transportation	8.0	6.1	5.0	-1.3	3.0	3.6	3.0	2.5	1.2
Communications	7.8	6.3	5.5	4.7	4.5	4.9	4.7	3.7	2.3
Repair and Personal care	8.4	5.7	5.0	4.1	6.2	6.1	6.1	4.4	3.5
Recreation	1.6	0.6	-2.5	-0.4	1.7	0.9	1.9	-0.4	-0.3
Health	3.2	1.4	0.9	0.8	2.9	0.7	0.1	-0.7	0.3
Education	5.8	1.4	1.6	1.2	2.2	1.2	1.7	0	0.1

^a Preliminary.

Table 11
United States and USSR: Production of Selected Consumer Goods

	1970	1975	1976	1977	1978	1979	1980	1981	1982
Food									
Grain ^a (kilograms per capita)									
US ^b	910	1,154	1,197	1,208	1,242	1,345	1,184	1,450	1,461
USSR ^c	769	551	872	756	908	681	712	590	667
Meat ^d (kilograms per capita)									
US	110	106	117	114	112	104	107	107	103
USSR	51	59	53	57	59	58	57	57	56
Transportation									
Passenger automobile production ^e (units per hundred persons)									
US	3.19	3.11	3.95	4.18	4.12	3.74	2.81	2.71	2.18
USSR	0.14	0.47	0.48	0.49	0.50	0.50	0.50	0.49	0.48
Household equipment									
Washing machine production ^e (units per thousand persons)									
US	20	20	21	23	23	22	20	19	17
USSR	22	13	14	14	14	14	14	15	15
Washing machines in use ^f (units per thousand persons)									
US ^g	194	238	248	256	263	273	280	287	291
USSR	141	189	195	200	203	205	205	205	205
Refrigerator production (units per thousand persons)									
US ^e	26	21	22	26	26	25	23	21	19
USSR	17	22	23	22	23	23	22	22	22
Refrigerators in use ^f (units per thousand persons)									
US ^g	336	340	344	349	349	352	352	352	349
USSR	89	178	194	210	225	240	252	262	268

^a The data do not necessarily represent food available for consumption, because imports of foreign grain and exports of domestically produced grain are not included.

^b Excluding corn silage and forage but including sorghum for grain.

^c Including miscellaneous grains and pulses. Measured in bunker weight, i.e., gross output from the combine which includes excess moisture, unripe and damaged kernels, weed seeds, and other trash. For comparison with US or other country grain output, an average discount of 11 percent should be applied.

^d Data are on a slaughter weight, bone-in basis.

^e Data are for factory sales and include complete units exported for assembly.

^f As of the end of the year.

^g Data are understated because they are based on the number of households with one or more units; thus, a household with more than one is counted as having only one.

Table 12

USSR: Average Annual Employment by Sector
(thousands)

Sector of the Economy	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total	103,774	113,942	121,990	122,988	123,932
Industry	31,593	34,054	36,891	37,236	37,550
Construction	9,052	10,574	11,240	11,298	11,321
Socialized agriculture	23,440	22,756	21,600	21,300	21,141
Transport and communications	9,315	10,743	11,958	12,172	12,375
Trade, public dining, sales & material technical supply, procurement	7,537	8,857	9,694	9,828	9,880
Health, education, social security, cultural arts, science & scientific services	16,561	19,196	21,515	21,909	22,275
Government administration, credit & insurance organizations	2,226	2,707	3,144	3,218	3,265
Other (housing, personnel services, etc.)	4,050	5,055	5,948	6,027	6,125

Table 13

USSR: Gross Fixed Capital Investment*

(Billion rubles, 1973 prices)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Total investment**	80.7	112.9	118.0	122.3	129.7	130.7	133.7	138.8	141.7
of which									
State	69.2	98.0	103.0	106.9	113.9	114.6	117.7	122.7	125.4
Collective farms	7.6	10.7	11.0	11.3	11.6	11.8	11.9	11.9	12.0
Cooperative enterprises and organizations	2.2	2.4	2.3	2.5	2.5	2.5	2.5	2.5	2.7
Private housing and apartments	1.6	1.8	1.7	1.7	1.7	1.7	1.6	1.7	1.6
Industry	28.5	39.7	41.6	43.5	45.6	45.7	47.6	49.9	NA
Agriculture	14.3	23.3	24.3	24.9	25.8	26.3	26.9	27.5	NA
Transport and communications	8.0	12.7	13.3	13.9	16.3	16.2	16.1	16.8	NA
Construction	3.0	4.3	5.0	4.7	5.2	5.3	5.4	5.8	NA
Other	26.9	32.9	33.8	35.3	36.8	37.2	37.7	38.8	NA

* Source: DDI Reference Aid, SOV 82-10093 (Unclassified), August 1982, Soviet Statistics on Capital Formation and N.kh. SSSR, 1922-1982.

** Components may not add exactly because of rounding.

Table 14

USSR: Growth of GNP and Factor Productivity
(average annual percentage change)

	<u>1966-70^a</u>	<u>1971-75^a</u>	<u>1976-80^a</u>	<u>1981</u>	<u>1982</u>
Gross national product ^b	5.3	3.7	2.7	2.2	2.0
Combined inputs ^c	4.1	4.2	3.6	3.2	3.1
Manhours	2.0	1.7	1.3	1.0	1.1
Capital	7.4	8.0	6.9	6.7	6.1
Land	-0.3	0.8	Neg.	Neg.	Neg.
Total factor productivity	1.1	-0.5	-0.8	-1.0	-1.0
Manhour productivity	3.2	2.0	1.3	1.2	0.9
Capital productivity	-2.0	-4.0	-4.0	-4.2	-3.8

^a For computing average annual rates of growth, the base year is the year prior to the stated period

^b Based on indexes of GNP (1970 rubles), by sector of origin, at factor cost.

^c Inputs of manhours, capital, and land are combined using weights of 55.8 percent, 41.2 percent, 3.0 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, other income, and social insurance deductions), capital costs (depreciation and a calculated capital charge), and land rent in 1970, the base year for all indexes underlying the growth rate calculations.

Table 15

USSR: Growth of Industrial Output and Factor Productivity
(average annual percentage change)

	<u>1966-70^a</u>	<u>1971-75^a</u>	<u>1976-80^a</u>	<u>1981</u>	<u>1982</u>
Industrial production	6.3	5.9	3.2	2.5	2.2
Combined inputs ^b	5.7	4.9	4.5	4.1	3.6
Manhours	3.1	1.5	1.6	0.9	0.7
Capital	8.8	8.7	7.7	7.8	6.9
Total factor productivity	0.5	1.0	-1.2	-1.6	-1.3
Manhour productivity	3.1	4.4	1.6	1.6	1.5
Capital productivity	-2.3	-2.6	-4.2	-4.9	-4.3

^a For computing the average annual rates of growth, the base year is the year prior to the stated period.

^b Inputs of manhours and capital are combined using weights of 52.4 percent and 47.6 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages and social insurance deductions) and capital costs (depreciation and a capital charge) in 1970, the base year for all indexes underlying the growth rate calculations.